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AUTOMOTIVE INDUSTRIES

The AUTOMOBILE

VOL. L

NEW YORK—THURSDAY, FEBRUARY 28, 1924

No. 9

Stern Action Is Urged to Banish Death from Highways

Graham warns that if education does not suffice to cut down toll, sharper weapons must be used. Jail terms and confiscation of cars proposed for reckless.

By George M. Graham*

Vice-president of Chandler Motor Car Co. and chairman of Traffic and Safety Planning Committee of National Automobile Chamber of Commerce

THE subject to which I address myself is distinctly a somber one. It cannot be relieved by cheerful treatment, nor by the facile graces of after-dinner speech. I do not offer my theme for your entertainment. I present it to your thought.

I have elected to discuss traffic safety, because it seems to me to outweigh in importance every problem which faces those who build the highways and the machines to operate upon them. If the individual transportation made possible by the relationship of automobile, street and the highway, is to attain its full measure of service to the public, we must find new means of safeguarding traffic. It is not enough for us to make good cars and trucks. It is not enough to devise, finance and build good roads. There must also be found the means to protect life.

The almost incredible increase in the number of automobiles and motor trucks has carried us, in little

more than two decades, from a total of 13,000 registered in 1900 to about 15,220,000 in use now. This is a gain of 116,000 per cent. Last year for the first time in the history of the automobile industry the

total production of cars and trucks exceeded 4,000,000—a gain of 50 per cent as compared with 1922, the previous record year. It took perhaps 5,000,000,000 gal. of gasoline to run them. These cars and trucks represented a wholesale value of \$2,500,000,000. Parts, tires and accessories totaled \$2,000,000,000 more.

The actual development is that we have been increasing the units of transportation faster than the streets and highways on which they operate. Volume has outstripped regulation. No good citizen can be indifferent to what has followed. We have seen an increasing

toll of disaster constantly levied against traffic.

The issue can hardly be fully grasped unless we consider automobile deaths in relation to the total mortality of the United States. The term "automobile deaths" is not an accurate one. As commonly

TRAFFIC safety outweighs in importance any problem which confronts makers, sellers and users of automobiles. Unless sane and constructive methods are applied to its solution, State and municipal authorities will apply such drastic regulatory measures that countless motor vehicles will be driven from the highways.

George M. Graham, one of the leaders of the automotive industry, has undertaken, with the assistance of an able committee representing the manufacturers, to initiate a national campaign which will result in uniform measures of relief.

AUTOMOTIVE INDUSTRIES presents Mr. Graham's views because it believes every person in the industry should know what is being done, so that intelligent and whole-hearted support can be given the work.

*Address delivered at the annual Highway Transport Conference held at the University of Michigan.

"WE believe that adequately kept statistics will show that in a majority of automobile accidents the fault is with the pedestrian rather than with the automobile driver. If any one doubts this, he can prove to his own satisfaction a hundred times a day how frequent is the indifference of the pedestrian to his own self-protection. 'Jay walking' has been accepted as a term to indicate those who cross the street anywhere and with utter disregard of the traffic. It is only the alertness and skill of drivers that prevent an infinitely greater number of accidents."

used, it is applied to all fatalities in which an automobile figures, directly or indirectly, whether the driver be responsible or not. Without conceding the accuracy of the designation, I accept it for the purpose of this presentation.

In 1921, which is the latest year for which complete statistics are available, there died in the United States from all causes somewhat in excess of 1,250,000 persons, and 74,000 of these met death by accident. Automobile deaths made up 1 per cent of the grand total, and one-sixth of the fatal accidents.

While 12,500 motor car fatalities comprise a most alarming total, yet this number is less than the death from firearms, which amounted in the same period to 14,450. Without any attempt to minimize the seriousness of motor car accidents, it seems to me that this last comparison is interesting. The value of firearms, particularly revolvers, which do not figure in the sport of hunting, is comparatively negligible.

Yet the statistics show that the automobile, the useful agency to the public, is responsible for fewer fatalities per year than the comparatively valueless and more or less discredited firearm.

It is often pointed out that the total of deaths is growing. This is lamentably true, yet there should be some encouragement in the fact that the increase in deaths is not keeping pace with the growing number of automobiles. 12,500 deaths in 1921 meant one for every 837 cars in use; the 15,750 automobile deaths estimated in 1923 would mean one to every 921 cars in use, an appreciable reduction. If there could be an accurate classification, which would include only those deaths for which the automobile driver was responsible, the showing would be still more favorable.

Driver Often Real Victim

To my mind it is a fair question if the driver is actually responsible for more than half the cases. I would go so far as to say that in many cases the driver is a much-to-be-pitied victim, since he must bear a portion of the suffering for an accident whose fault was not his.

The automobile manufacturer has no control of the car after he sells it. Like the maker of the locomotive, the steamship, the motor boat or the trolley car, his function is limited to the turning out of a good product. He has nothing to do with the operation of the car afterwards. Nevertheless, the automobile industry does not quibble. It unhesitatingly accepts its responsibility. We are determined aggressively and cooperatively to do our share toward cutting down this total of accidents and

fatalities. We are ready to join with any organization that can help toward the desired end.

The automobile is a great public benefaction and must not be converted into a juggernaut by the unskilled, the reckless, the speed mad or the drunken.

The enormous popularity of the automobile, the increasing population of our cities, and the ever-present congestion of traffic makes the problem a vast one. We believe that before remedies can be suggested we must ascertain the cause of accidents.

We have no quarrel with any newspaper which gives vigorous publicity to automobile accidents, no matter how bitterly it calls for preventive measures. We feel that in many cases the press unwittingly does injustice to the automobile industry by charging against it disasters for which it is not responsible.

We do not point out this fact in any spirit of resentment. We, ourselves, are just as anxious as the editors to safeguard life. We share their indignation against those who violate traffic laws and endanger pedestrians. We believe, however, that a policy which records only the results, without attempting to ascertain the causes, is futile.

Many Causes of Accidents

There are many causes of accidents in addition to bad driving. Before we can apply the major remedies—education, regulation and punishment—it is vital to know why lives are lost. Up to date there has not been much serious effort in this direction. Only eight States—Connecticut, Indiana, Maryland, Massachusetts, Rhode Island, Vermont, Virginia and Wisconsin—make any effort to keep an adequate record of any accidents occurring in the street and highway.

In these States the motorist is required by law to make a complete report of an accident to the Commissioner of Highways, the Commissioner of Motor Vehicles, the Secretary of State, or the nearest judicial official. The report develops such facts as: time of accident, where the accident occurred, whether it was on a curve, road intersection, etc., railroad grade crossing, the age and sex of injured, and a statement of whether it resulted from fault of the driver or the pedestrian.

Governor Smith of New York recently deemed the subject sufficiently important to deal with it in a special message. He did not hesitate to say that the State of New York has been far behind the neighboring States of Massachusetts, New Jersey and Connecticut in efforts at prevention. The Governor powerfully argues that New York used 75 per cent of the revenues from automobile licenses—about \$20,000,000 per annum—to meet the current expenses of the State, using virtually nothing for safety development, thereby viewing the subject in terms of dollars without regard to protection of lives and property. Because of superior methods applied by Massachusetts, fatalities in that State were reduced from 532 in 1919 to 500 in 1922, whereas in New York in the same period they grew from 1361 to 1725.

The percentage of increase in population and in use of motor cars is about the same in both States, and arguing from this fact, Governor Smith says that the same intelligent action on the part of New York State would have made an equal percentage of reduction in fatalities there. In addition to Massachusetts, Connecticut, Montana, Washington and Virginia may be mentioned as other States which by study of the subject are bringing down their death lists in spite of the increasing use of automobiles.

The logical outcome of this line of reasoning is that many deaths are preventable under proper regulation. We believe that this is a most helpful approach. It

seems to us far more advantageous to the public that a newspaper, instead of printing merely the number of deaths, should also, as far as possible, explain the causes and point out possible methods of prevention. With this idea in mind our committee has planned a most elaborate campaign which will depend for its successful operation on the assistance of the editors of our newspapers in cities of more than 25,000 population.

We recognize these newspapers as a mighty force in our public life. We know their sincerity and unselfishness. We fully grasp the intensity of their concern over the increasing number of accidents. We go to them with the confidence of support, since our motives are identical. Concretely, our plan is this:

We have requested of the newspapers that in every case where there occurs a death from an accident in which an automobile figures, the reporters be instructed to note on a blank form, furnished by the National Automobile Chamber of Commerce, the principal points of information which will be germane to our investigations.

We are dealing only with deaths. This limits the resulting mass of statistics, and we think that this limitation is entirely practicable, since the same causes which result in deaths are also responsible for lesser accidents. Much of the material we desire to gather is no different from what the newspaper constantly assembles for its news columns. We merely wish to make sure that the reporter gets and records the essential facts. At the end of each week we ask the editor to summarize such reports as have come to him from the members of his staff, and send these analyses to the National Automobile Chamber of Commerce. The National Automobile Chamber of Commerce will then have an expert study made from the findings.

Will Give Papers Statistics

Once a month we will send to the newspapers a report on the fatalities of the month the country over, their causes and possible means of prevention. If this plan functions it will gradually result in the dissemination of an enormous amount of valuable information and will ultimately make the newspaper a clearing house for safety suggestions. If we can get the cooperation of the newspaper we believe we have set up a machinery that will do a work of infinite educational value.

Out of this nation-wide inquiry and this monthly summary of causes we believe there will develop suggestions which can be acted upon by civic bodies and safety organizations throughout the country. It is cowardly to accept the present situation and to believe that nothing can be accomplished in the way of correction. If the activity of all the assisting organizations resulted in the saving of only one life per day throughout the United States, it would be a work well worth while.

In presenting to you our plan of nation-wide investigation, I have put our educational activity first. This seems to me well-advised. It is an old but a true saying that prevention is better than cure, which is merely another way of giving education the preference over punishment. It has already been shown that much can be accomplished in the way of educating the child.

The city of St. Louis, for example, cut down the number of motor fatalities to children from 49 in 1919 to 25 in 1922. Detroit has also made a considerable accomplishment in this direction. There is no doubt that one of the most prolific causes of automobile fatalities is the darting of the child in front of a moving vehicle. Twenty-five per cent of the Massachusetts child fatalities were so caused.

Playgrounds are needed to give proper release for juvenile energy, and safety education should be stressed

in all schools. The National Automobile Chamber of Commerce has long been alive to this condition and gives \$6,500 yearly in prizes for the best essays and for safety lessons by teachers and pupils. No less than a half million participated in these contests last year.

The motorist himself stands in need of education so that he may not put life in jeopardy through incompetence. I am not at this point dealing with the question of punishment for reckless or drunken drivers, but I am concerning myself with giving efficiency to those who want to do the right thing.

Would Teach Traffic Rules

Every driver should properly be instructed into the laws of the road and of the city street. He should also be trained rigidly into a due regard for the safety of the pedestrian. If the plans of our committee carry, we hope that eventually there will go to every purchaser of a new car a little booklet which will assist him in handling his car with due regard to the safety of the public.

We believe that adequately kept statistics will show that in a majority of automobile accidents the fault is with the pedestrian rather than with the automobile driver. If any one doubts this, he can prove to his own satisfaction a hundred times a day how frequent is the indifference of the pedestrian to his own self-protection. "Jay walking" has been accepted as a term to indicate those who cross the street anywhere and with utter disregard of the traffic. It is only the alertness and skill of drivers that prevent an infinitely greater number of accidents.

Even where a pedestrian has the right of way he should be watchful lest a car may pass out of control, as for instance on a slippery street. If we could but instill the idea of precaution into both the motorist and the pedestrian there would be almost instantly a most impressive casualty decrease. Newspapers, magazines, trade journals, churches, schools and moving picture theaters can all sound their warning and exert their influence on educating the public toward accepting a greater responsibility.

All the great cooperative organizations—whether municipal, State or federal, trade organizations, farmer or labor organizations, public utilities and law makers—all can do their part.

Everybody concedes that one of the greatest needs is standardization of regulations. It is also admitted that

“TWELVE THOUSAND AND FIVE HUNDRED deaths in 1921 meant one for every 837 cars in use. The 15,750 automobile deaths estimated for 1923 would mean one to every 921 cars in use, an appreciable reduction. If there could be an accurate classification which would include only those deaths for which the automobile driver was responsible, the showing would be still more favorable.

“To my mind it is a fair question if the driver is actually responsible for more than half the cases. I would go so far as to say that in many cases the driver is a much-to-be-pitied victim, since he must bear a portion of the suffering for an accident whose fault was not his.”

“WE believe that coordinated action can accomplish a notable improvement, but if the combined results of all our efforts should be but the saving of one life a day the country over, the work would be well worth while. We shall spare nothing in effort. We will cooperate unselfishly.

“It is our hope that the friendly, warning hand of education may suffice to banish death and disaster from the ways of traffic, but if it be necessary to summon the sterner weapons of punishment, we shall advocate their use without stint or favor.”

this is most difficult of accomplishment. What is legal in one city is illegal elsewhere. A course of procedure that might mean safety in one State would lead to fatality in another.

This need for uniformity is twofold:

First—Signals to be made by the drivers themselves.

Second—Signs and signals to direct traffic.

With regard to the first, your speaker has very definite views. I believe that all the intricate attempts at driver signal systems are all fallacious. I do not believe that any set of hand signals can be perfected for general use which will infallibly indicate the driver's purpose to stop, turn up or turn to the right or left. Under the stress of excitement a driver may readily forget even an apparently simple system. Also, it is not always easy, while managing a car, to get the arm and hand exactly in the position to carry certain information to traffic behind.

In my judgment, there is just one thing to do, and that is to thrust out the left hand as a sign of warning. This will act as a signal to slow up everything behind until the driver's intentions have been ascertained. The question of the signals which shall guide the driver and regulate traffic involve a far more complicated proposition. Wherever there are standards generally accepted these should be followed.

For example, I see no excuse for anything but green lights to permit traffic to go ahead, and red lights to stop it. Railroad practice has established this system throughout the United States. Therefore, since this is known everywhere, why trifle with it?

Standardization Work Valuable

If we could standardize the regulations for size, weight, speed, equipment, warning signs, etc., we should do a wonderful thing toward safeguarding human life. Much is already being accomplished. The American Automobile Association, with its affiliated clubs through the United States, is working strongly in this direction, and seems to me the most effective organization to do this job. The National Automobile Chamber of Commerce, as represented by our committee, and its affiliations with dealers throughout the United States, is co-operating with the American Automobile Association.

We sincerely believe that the modern automobile leaves little to be desired in respect to safety. Brakes, steering, and gear shift mechanism have all been developed to a point which makes the car safe in the hands of a competent and reasonably careful driver; but if more can be accomplished in this direction we are ready to go the limit regardless of cost. There is no manufacturer who will not, without hesitation, put upon his car any demonstrated improvement that will safeguard life.

The tire maker has done much to reduce the likelihood of skidding.

Every community should have either an individual or a commission responsible for its traffic, making studies of the volume of traffic and recommending methods for its handling. Many accidents could be prevented by better regulation of overcrowded streets.

What I have thus far said covers very largely the question of education. When it comes to punishment, we feel very strongly. We believe that for proved offenses, especially those which result in serious accidents or deaths, no penalty can be too severe.

Our police and our judiciary who impose extreme sentences for such serious offenses as overspeeding, reckless driving, or driving when intoxicated, should have staunchest support, for they are the best friends of the motorists and of the industry. It is a cheering fact that throughout the United States, particularly in all the great cities, we have seen the building up of strong organizations of traffic policemen, motorcyclists, etc.

These men do conscientious and intelligent work, and with thousands of vehicles passing them daily, are for a large part of the time in actual physical danger. In cities where judges have been bold and patriotic enough to impose jail sentences, too often has there been interference calculated to defeat the ends of justice.

Reckless Deserve No Mercy

The statistics of Massachusetts and Maryland indicate speeding as a major cause of automobile accidents, 158 out of 522 deaths being reported as so caused. Intoxication was the cause in 10 per cent.

Why any mercy should be shown to this type of offender is something that the automobile industry does not understand.

The fear of God should be put into every murdering criminal. This cannot be done by fines. The heedless pay these fines and dismiss the matter almost as a joke.

Judge Bartlett of Detroit has expressed the opinion that only jail sentences stop the reckless driver. The automobile industry pledges its full support to every judge who imposes jail sentences for proved offenses, no matter how severe may be the penalty.

We believe also in the suspension or revocation of license as a penalty. In fact, we have reached the point where we are willing to recommend what may be regarded as perhaps the most drastic action yet taken.

We propose that when, after due process of law, a driver is proved responsible for a serious accident or death, that in addition to all penalties now imposed that he should forfeit possession of his automobile for a period to be determined according to the seriousness of offense. We believe that it is not enough to take the license. Take away the car, too. There seems to us something right and fit in making the punishment follow the car.

It is stated by some that such a procedure is confiscation and would be unconstitutional. We do not agree with this viewpoint. It is present legal procedure in all parts of the country to take from a man that which he has used to the detriment of the public. Thus, we find police authorities everywhere confiscating murderous weapons, gambling devices, illicit liquors and conveyances used for the transport of such liquors. We have seen property taken from raided saloons. We have seen homes and business establishments padlocked when they have been used for disorderly purposes.

If all this be legal, we believe that our suggestion of impounding cars is legal. But, if this cannot be done under present laws, we recommend that the various State

(Continued on page 511)

Six-Cylinder Engine and Four-Wheel Brakes Feature New Reo Bus

Power unit and gearset mounted in sub-frame in similar fashion to passenger car of same make. Front and rear axles are quite conventional but differ somewhat from other products of this plant. Body seats 21. Top of frame is about 22 in. from ground.

REO has just announced a new bus fitted with four-wheel brakes, a six-cylinder engine mounted in a subframe, progressive type rear springs and pneumatic tires. The chassis has 176-in. wheelbase and the body is designed to seat 21 passengers. Weight of the complete vehicle is 7150 lb. and the list price is \$2250 for chassis only.

Reo claims that this new bus, which is smaller than many competing makes, can be operated throughout the day at more nearly full load than is usual in most cases when a bus of larger capacity is employed. The smaller bus is said to be more economical on this account but still is adapted to handle service in congested districts and at peak loads by the addition of a larger number of buses during rush hours.

All four wheels carry brake drums, inside of which are expanding shoes operated by the hand lever. Foot brakes are contracting type and operate on the rear wheel drums only. Both sets of brakes are equalized and the total braking surface is said to be 621 sq. in. Brake lining in the rear is 3 in. wide and that in the front 2 in. All linings are 3/16 in. thick.

Front brakes are operated by universal joint shafts of the same general pattern used in the Perrot system.

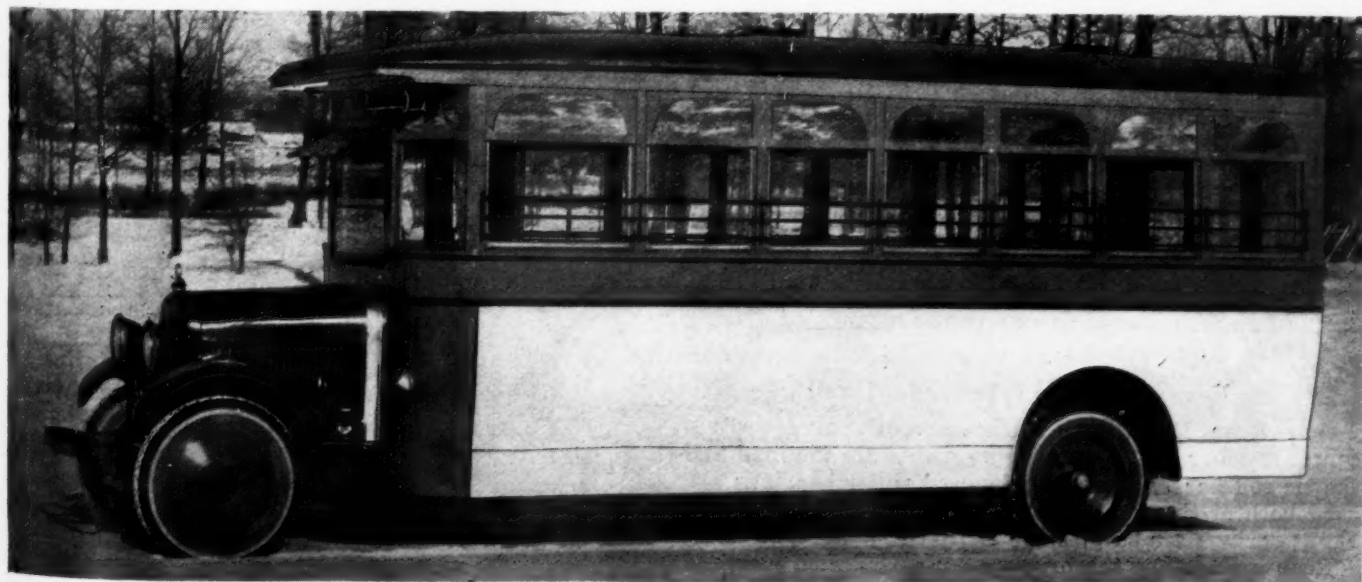
Practically all parts of the bus are built in the Reo plant. Engine cylinders are cast in a single block and have 3 3/16-in. bore. The stroke is 5 in. and the total

piston displacement 239 cu. in. The engine is said to develop 50 hp. at 2000 r.p.m. It is mounted, together with a separate gearset, in a subframe calculated to relieve the engine from frame stresses, lower the center of gravity of the chassis, permit practically straight line drive and distribute the powerplant load more uniformly on the main frame structure.

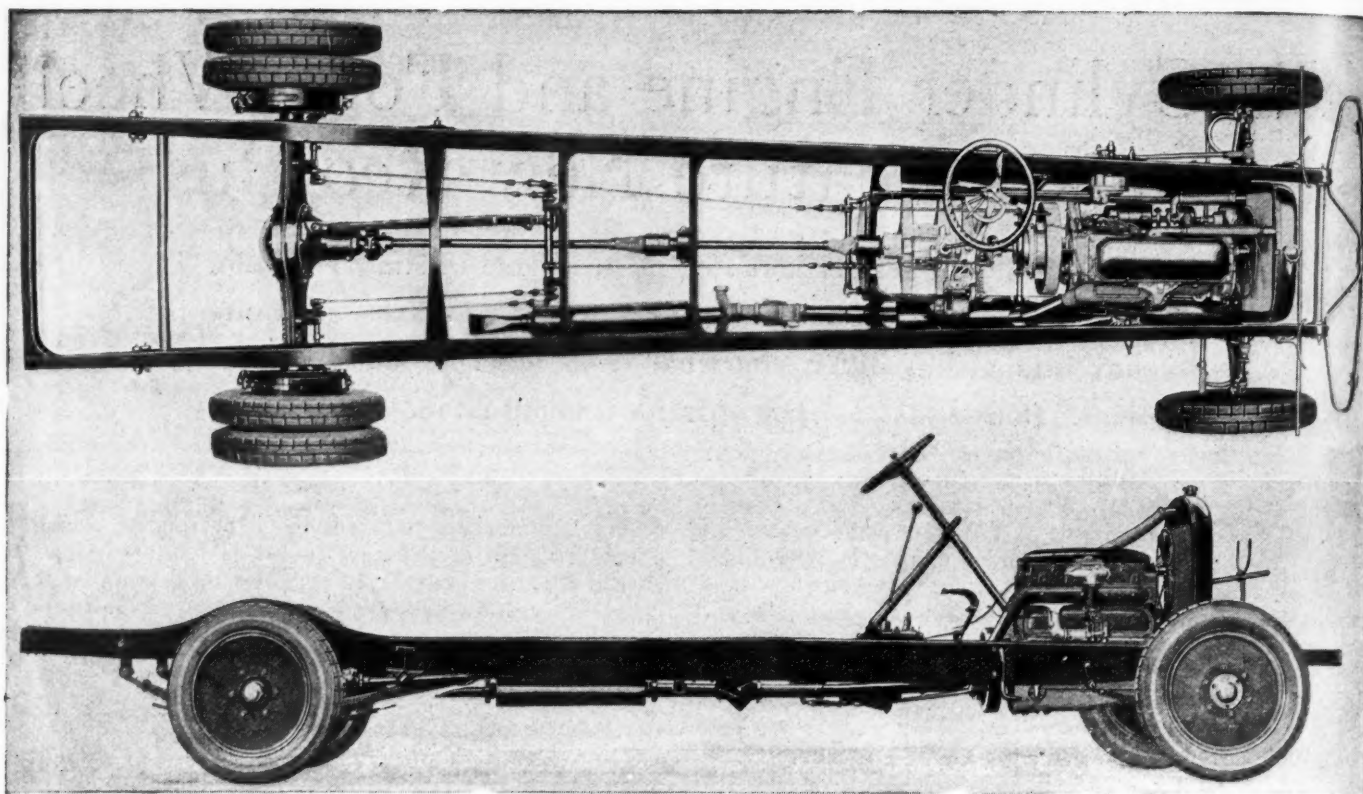
Engine Similar to Car Unit

The engine is of the same size and general design as that used in the Reo passenger car. The intake valves are in the detachable cylinder head while exhaust valves are located at the side of the cylinder. Exhaust valves have 1 3/4 in. and intake valves 2 1/8 in. clear diameter. Pistons are of aluminum and have two-piece compression rings and an oil wiper ring. Piston pins are fastened in the piston and turn in the bushed end of the connecting rod.

Cylinders and upper half of crankcase are cast in one piece, with coring such as to provide water jacketing completely around the valve seats. All crankshaft bearings are 2 1/4 in. in diameter, including those on the crank pin. Oil is fed to main bearings and valve levers under pressure, other parts being oiled by splash. A plunger type oil pump is driven by an eccentric on the camshaft. The usual oil gage and level indicators are provided. Water circulation is by centrifugal pump.



Reo's new bus which seats 21 passengers. Note location of horn and filling spout of gasoline tank at front corner of body



Plan and side views of new Reo bus chassis with six-cylinder engine and brakes on all wheels. Engine and gearset are mounted in a sub-frame similar to that used in Reo passenger cars

A multiple dry disk clutch with seven plates having facing on each side and six alternate plates of plain steel is employed. The gearset is separately mounted and is connected to the clutch by universal joints, one of the metallic block and pin type and the other of fabric construction. There are three forward speeds in the gearset which has gears of $\frac{7}{8}$ -in. face ground or lopped before assembling to insure quietness. 3.68 to 1 reduction is used in low speed and 1.8 to 1 for intermediate.

A three-piece propeller shaft with two metallic and the one fabric universal is employed. An S.K.F. ball bearing mounted in a housing attached to a frame member near the center of the chassis supports the propeller shaft just forward of the center universal.

The semi-floating rear axle was designed especially for this chassis. It is fitted with chrome nickel steel live shafts of $2\frac{3}{8}$ -in. diameter. Wheels and differential have tapered roller bearings while the pinion shaft is carried in taper roller bearing of a new steep angle type. The axle housing is formed from $\frac{7}{32}$ -in. pressed steel heavily webbed with all joints riveted and then welded. The spiral bevel gears have a standard ratio of 5.7 to 1. Minimum road clearance under the axle with bus loaded and fitted with 30-in. tires is approximately $7\frac{3}{16}$ in. A torque arm is employed to relieve the springs of driving and braking stresses.

Reverse Elliot Type Axle Used

A reverse Elliot axle with conventional H-section center member is used. Steering pivots are inclined and the tie rod has ball joints. Tapered roller bearings are used both at the top and the bottom of knuckle pivots. Front springs are 38 in. long by $2\frac{1}{4}$ in. wide.

Rear springs are the progressive variety, so arranged that the upper leaves carry all the weight while the bus is running light. Lower leaves come gradually into action as the load is increased.

Either single or dual tire equipment can be furnished. Dual equipment consists of U. S. cord bus type tires, 30 x 5-in. dual rear and single front on type B Firestone rims. Single equipment includes the same make of tire and rim of 32 x 6-in. size. Seven demountable disk type wheels are furnished with dual equipment and five with single. The spare tire is carried on a support at the left of the driver's seat inside the body.

A Reo steering gear employing a bevel gear and sec-



Front view of new Reo bus, showing the front axle and universal shafts for operating the hand controlled front brakes

tor is used. The steering wheel is 18 in. in diameter and is mounted on a nickel plated column. The turning radius of the chassis is about 31 ft.

Electrical equipment includes a combined North East generator and distributor driven by flexible coupling at the left side of the engine, a starter of the same make driving by chain to the clutch shaft, a six-volt Willard thread rubber battery, two headlights, guide lamp in front and combined stop and tail light in the rear.

A double-outlet valve with easily operated control for the heating system is placed in the exhaust pipe just forward of the muffler.

Frame Construction

Frame side members are 3 11/16 in. deep by 3/16 in. thick and have 3-in. webs. There are seven cross members. The frame measures approximately 43 in. at the rear and 29 in. at the front. Side members are as straight as viewed in plan but are kicked up over the rear axle. The top of the frame is about 22 in. from the ground.

Tread at the front is 56 in. and at the rear 57 1/4 in. with single tires. The chassis weighs approximately 3600 lb. and the standard body 3400 lb. The frame overhangs the rear axle 45 1/2 in.

The standard Reo bus body is 197 in. long, 87 in. wide and 72 in. high. Standard cane street car seats with brass hand grips and stationary backs are employed.

Six of the seats face forward and two face backward, while there is a continuous seat across the rear of the body.

A bucket type driver's seat mounted on a pedestal and upholstered in black leather is employed. There is an emergency door in the center of the rear panel. Windows are adjustable and have the usual guard rail outside. There are two ventilators in the roof. The windshield has two sections and is provided with an adjustable green glass visor and an automatic windshield wiper. A mechanical control for opening and closing the two-panel front door is placed to the left and a little forward of the driver.

Other equipment includes North East speedometer and horn, a 25-gal. gasoline tank attached to the body under the floor to the left of the driver and with filler outside the body, fire extinguisher, a mirror, stop signals, destination sign and interior lights. A substantial bumper is fitted to the front end of the frame.

The entrance doorstep is 15 3/4 in. from the ground and the second step is 11 3/8 in. high. Interior woodwork and trimmings are finished in mahogany and ceiling in white. The exterior of the body is finished in orange above the belt and light lemon below. Disk wheels are orange and the hood and radiator are enameled in black. The storage battery is placed in a compartment under the floor directly behind the step and is accessible from inside the body after removing a single cap screw.

Tuning Up Racing Cars

SOME hints on the design and tuning up of racing cars are given in *Der Motorwagen* by Georg Schwarz, a director of the Neckarsulmer Fahrzeugwerke. He says that the speed which can be attained depends in the first place on the output of the engine. This in turn depends upon the speed and the gaseous pressure. Every effort must be made to secure high volumetric efficiency, and the highest practicable compression ratio must be used. The inlet valve must be held open as long as possible and it must not flutter during the closed period. Experiments with superchargers are at present being carried on in numerous factories, and if it should prove possible to design them so as to be reliable in long distance drives, they undoubtedly have a great future before them.

High speeds of rotation involve great inertia forces on the reciprocating parts. It is true that the use of light alloy pistons, which is now common in racing engines, reduces these forces; yet while shifting gear their torque may become sufficiently great to prove fatal to the crankshaft.

A high cooling temperature is favorable to high output, so long as the water does not reach the boiling temperature. Radiator fan and water pump sometimes give trouble and if they can be eliminated there is one less cause of worry.

The rear axle reduction is so chosen that the engine operates substantially at its speed of maximum output, as determined from the horsepower curve. If shaft drive is used the shaft dimensions must be calculated so as to obviate the possibility of its attaining its critical speed.

Suspension of the frame constitutes a special chapter, and scientific research in this field should be utilized much more than it has been in the past. We know how vibrations die out with and without artificial damping, but numerical data concerning the optimum dimensions of springs for given speeds are nowhere to be found in automobile literature. Experience has shown that the vibration period of the springs should bear a certain relation to the

maximum speed; that is, the higher the speed, the stiffer should be the springs. In general the problem can be solved in a satisfactory manner by the use of simple leaf springs combined with shock absorbers.

The minimum weight limit is seldom attainable without a strict "rationing" of all cross sectional dimensions, but in view of the psychological effect on the driver it is not advisable to go too far in this procedure. Particularly a factory expert acting as driver will examine each part with a critical eye during assembly, and he will only do his very best in the race if he feels that nothing can happen to him because of insufficient strength.

Opinions differ as to the best form of body for racing cars, but in no case should it have the undesirable property of causing the car to "swim" at high speeds, because this interferes with steering and may even make it impossible to drive the car so as to utilize the maximum engine power.

Improvement in Self-Opening Die Heads

THE Eastern Machine Screw Corp. of New Haven, Conn., in its self-opening die heads for Cleveland automatics and similar machines has improved the method of adjustment for the length of thread cut. When the forward movement of the turret or tool holder ceases, the die continues to thread until the forward movement of the locking pin is stopped by the adjusting nut coming in contact with the flange on the shank, and the die head immediately opens. A finer adjustment in length of thread is therefore provided than could be obtained by moving the die head farther out or farther into the turret or tool holder.

This adjustable tripping mechanism is said to be simpler and stronger than that formerly used. The heads are closed automatically by means of a stud which comes in contact with an overhanging arm on the machine as the turret rotates.

Just Among Ourselves

Uniform Color Schemes Sadly Needed in Traffic

COLOR schemes are held by proud possessors of artistic temperaments to be important in interior decorating, house painting and toilettes, but several million motorists will tell the world that color schemes in traffic signals are the eel's adenoids when it comes to variety. Standardized interior and exterior decorations for both animate and inanimate objects may be highly inflammatory to artistic temperaments, but even the most artistic has more than an academic interest in knowing whether a red signal light means "stop, look and listen" or "go ahead." Traffic signals are as infinite in color varieties as Balkan shawls and there is even less sense in them. It is fortunate, therefore, that the American Engineering Standards Committee has made substantial progress in its program of recommendations for traffic signals which will mean the same thing wherever they appear. It already has been agreed that red, green and yellow, the colors used universally by the railroads, should be the primary traffic control signals but it has not been decided finally what meaning should be assigned to each. The work this committee is doing is well worth while.

Stock Prices Not True Barometer of Business

CERTAIN sections of the public, especially those of speculative habits, have made a fetish of the idea that when stock prices decline the country is going to the dogs and that every one in business should find a nice, safe storm cellar to crawl into. If enough people "hold" that thought long enough they may make a fact out of a fancy. They almost succeeded last year. Stocks tobogganed for several months and only irrefutable proof of record sales and production pre-

vented a period of depression. Now the same forces are at work again. Stock prices are declining and we hear the same persistent reports that the volume of trade is not satisfactory. The idiocy of this assertion is demonstrated by the fact that car loadings for the week ended Feb. 2 reached a total of 929,936, establishing a new record for all time for January or February. Loadings of miscellaneous freight, which includes manufactured goods, made up almost one-third of the total and showed an increase of 16,249 cars over the corresponding week of 1923. It's about time this stock market fetish was sent into the limbo of forgotten things.

Remarkable to Relate! Tax Concession to Motorists

MOTOR vehicle owners who have become accustomed to paying taxes on everything directly or indirectly connected with automobiles, were amazed the other day when the collectors of internal revenue for Manhattan Island, who are the biggest shekel gatherers in the business, ruled that garage bills, gasoline and repairs may be deducted from income tax bills when cars are used exclusively for business, trade, professional or farming purposes. That concession in itself seems remarkable, but even more remarkable is the fact that they held that when a car is used partly for business purposes and partly for pleasure or convenience, the cost of maintenance may be prorated and the part attributable to business pursuits may be deducted as a legitimate business expense. If this ruling is applied to the entire country, and there is no reason why it shouldn't be, the total saving will reach a substantial figure for there are mighty few passenger cars which are not used for business purposes at least part of the time.

General Motors Executives Make Traveling a Science

ALFRED P. SLOAN, Jr., president of General Motors Corp., doesn't exactly commute between New York and Detroit, but he makes the trip about as often as the crews on the fast trains. He seldom travels alone because it usually is necessary for several executives of the company to go with him. A regular routine has been established which makes the journey as easy as possible. In the first place, conversation about General Motors is absolutely taboo. As a preliminary to each trip the party is organized and it is determined by chance who shall look after the baggage, the dinner arrangements, the porters and the red caps. It often falls to Mr. Sloan's lot to chase porters and he does it with the utmost good humor. The party travels two to a compartment and again chance determines who shall occupy the upper berth so that the president takes the upper bunk as often as any one else. Early to bed is another established rule. Being president of General Motors is a tough job, especially for a man who would rather work than do anything else, and Mr. Sloan's colleagues have tried to make traveling as easy as possible for him.

Traffic Accidents Alone Make Life More Hazardous

ONE of the saddest things about automobile accidents is that they are the only ones in the entire category of mishaps which have been increasing steadily in number in the last ten years. The hazards of existence, in the United States at least, have decreased in every other direction. The death rate from all causes in 1923 was 891.3 per 100,000 of population as compared with 1199.4 in 1913. Less than a third as many persons died of typhoid fever and

More or Less Pertinent Comment on Topics of Current Interest to Men in the Industry

only about half as many of tuberculosis in 1923 as a decade ago. The murder rate was virtually the same, but there were only about half as many suicides. Deaths from burns were cut by a third and from drownings by a half. The railroads were 100 per cent safer, but the death rate from automobiles increased nearly 400 per cent. These statistics of the activities of the Grim Reaper may be rather depressing, but they prove beyond question that something must be done, and that without delay, to make streets and highways safer.

Motorized Farm Movement Has Not Been Checked

ANOTHER myth has been exploded. It is that the movement to motorize the farm has been checked and that the number of horses in use in agricultural areas is steadily increasing. The annual report of the Department of Agriculture shows that the number of farm horses in the country at the beginning of 1924 was only 18,263,000 as compared with 21,555,000 in 1918, a decrease of 3,290,000, or 15 per cent, in six years. The average farm value of horses fell from \$110.77 per head in 1913 to \$64.41 at the end of last year. Meanwhile motor vehicle registration on farms had increased from 2,285,000 at the beginning of 1920 to 4,250,000 at the beginning of 1924.

Several Big Oil Companies Will Distribute Ethyl Gas

GENERAL MOTORS CHEMICAL CORP., of which C. F. Kettering is president, has virtually completed arrangements for the marketing on a national scale of tetra ethyl lead, its "anti-knock" compound, known as ethyl gas. Contracts have been made with several large oil companies for the distribution of the gas and it will be possible to obtain it the coming season

at their filling stations by the payment of three cents a gallon additional for the gasoline purchased. A simple device which has been perfected will be attached to the gasoline pumps and will add about a spoonful of the liquid to each gallon of fuel. No motor adjustments will be required. Ethyl gas has a pronounced effect upon combustion. Because of its ability to prevent detonation it is possible to employ higher compression pressures which, in turn, would make the engine more efficient and thus decrease the amount of fuel consumed per mile. Accumulations of carbon cease to be a nuisance because they fail to produce knocks.

Clothiers Told to Advertise Like Automotive Merchants

THE clothing industry, which is mourning the loss of much trade and blaming the automobile instead of trying to figure out constructive methods of increasing its business, is getting a helpful suggestion now and then from some one outside its own ranks. For instance, Harry E. Bodine of the United States Fashion Co., told the members of the Men's Apparel Club of Pennsylvania the other day that intensive advertising had been an important factor in bringing the automotive industry to its present outstanding position in the economic life of the country. He contended that the same results could be achieved with men's clothing if the plan of campaign was properly conceived and carried out. Sitting back and cussing never brought customers to any business unless intensified selling effort accompanied the vocal fireworks. The clothing industry might also find it profitable to give careful consideration to the fact that every dollar spent today for automotive products brings at least 11 cents worth more value than it did in 1913. The same can't be said of men's clothing.

Jordan Advises Dealers to See Their Bankers Often

NOT only is Edward S. Jordan a remarkably able merchandiser, but he is also blessed with much more than the ordinary amount of horse sense. Perhaps the one attribute is responsible for the other. Every once in a while he sends out a circular giving advice to dealers. Quite naturally it is designed to promote the interests of his own line, but it usually contains some advice of value to dealers handling any line. For example, in the latest circular, he says: "We have one suggestion we would like to make to every dealer. If you are a man of good character and know your business, get in touch with your banker now. Tell him your whole situation and ask his advice. Show him your statement and be sure you show it to him at least every thirty days during the next twelve months. Tell him the truth about your business. He can help you to succeed. Your banker is interested in having YOU make money."

More Automobile Owners Than Telephone Subscribers

ONE of the leading directory companies which makes a specialty of getting up lists of names for all conceivable purposes has found that the small town merchant who relies exclusively on the telephone book in getting out lists is overlooking many a good prospect. As an example, it was found in a small Indiana town that 431 out of a total of 637 automobile owners were not listed in the telephone book. On the other hand, out of 437 telephone subscribers in that particular town, there were only 236 who did not own automobiles. The moral is that a list of automobile owners in any town will include the bulk of the buying power and is the best that can be compiled for trade purposes. J. D.

Developments Now Under Way Will Mean Better Motor Car Performance

Balloon tires, anti-knock fuel, air cleaner, oil filter, fabric body and color enamel all likely to influence design in near future. Branches of trade closely related to manufacture of automobiles making progress. Conclusive tests well advanced.

By J. Edward Schipper

INTERESTING developments in automobile engineering may be expected in 1924. Now that the two national shows are out of the way and the annual breathing spell between announcements by car manufacturers is here, it is possible to get a sort of bird's-eye view of the trends in design. Some of these tendencies already have been outlined but there are some others which are more apparent now that the new cars have been on display together and since the annual engineering meetings have brought to light many of the lines along which engineers are thinking.

Developments along outside lines will have more than the usual effect on designs in the next two years. It is usual for improvements to be the direct result of better methods evolved either from the drawing board or in the shop, but this year they are likely to come from the balloon tire, anti-knock fuel, air cleaner, oil filter, fabric body, color enamel and quite a list of other developments in arts allied to but not exactly connected with automobile manufacture. In addition, automobile designers have quite a list of suggested improvements which will go far to improve the product of a year or two from now.

Some of the new products of research in automobile engines which promise to lead to higher efficiencies are the real effects of turbulence, the benefits of proper manifolding, silencing of the front end drive, improved crankshaft forging methods, better valve materials, better oiling systems, etc.

Balloon Tires Permit Lower Weight

One prominent manufacturer of large and rather high priced cars recently said that with balloon tires he would be able to take 1000 lb. of weight out of his car. If this is true, and presuming that his car weighs 4000 lb., he will get nearly 25 per cent better acceleration for the same amount of power, since acceleration is practically proportional to the weight. Even if the figure is somewhat exaggerated, it will be reasonable to expect some striking improvements in performance as a result of weight reductions due to the balloon tire.

Because of the cushioning effect of the balloon tire, the shocks on the unsprung parts are greatly reduced. This in turn will permit a reduction in the factors of safety previously thought necessary with parts subjected to road shock. A reduction in the weight of the unsprung parts not only lightens the entire car, giving correspondingly greater acceleration and hill climbing ability, but also improves the riding qualities.

The springs may also be accommodated to the balloon tire in an advantageous manner. Because of the smaller diameter of the wheel and the greater deflection of the tire the car is brought somewhat lower, and it is not

necessary to limit the deflection of the springs to so great an extent. In other words, a softer suspension should result not only from the tires but from easier springs as well. The riding qualities are thus improved in three ways by the balloon tire: First, the shock-absorbing qualities of the tire; second, by the lighter unsprung weight, and third, by easier spring suspension. The lower center of gravity of the car where reductions in the overall diameter have been made also has its effect.

Anti-Knock Fuels Developed

Anti-knock fuel will be available in many parts of the country by mid-summer. This development, which is complementary to turbulence, is likely to be of considerable value. The thermal efficiency of an automobile engine depends very much on the freedom from detonation of the fuel, the rapidity of flame propagation and the compression. Fuel men are working to produce a fuel which will not detonate, and engine men are evolving methods of speeding up the rate of flame propagation and increasing the compression without making the engine rough. A great part of their success, as has been pointed out in these pages, depends on the ability to produce faultless distribution at all speeds and under various temperature conditions.

It probably will be some time before the engine designer will be able to increase compression because of the existence of the anti-knock fuels. Because of ability to utilize the benefits of turbulence, however, higher compressions and less spark advance will be the rule in the new powerplants. The resulting gain in thermal efficiency is due in no small measure to the more complete combustion of the fuel. Exhaust gas analyses on better designed up-to-date engines will show a higher CO₂ percentage. Practically, this means less fuel consumption and higher power outputs from engines of a given capacity. To reap the benefits of these improvements better manifolding for more accurate distribution is imperative.

Hand in hand with these improvements which will better the output there are developments which are calculated to increase the life and the economy of operation. Foremost among these are the air cleaner and the oil filter. Both of these will make great strides in 1924. One company making air cleaners reports more than a dozen companies on the verge of signing contracts for regular equipment. Another organization in the same line of work claims to have arrangements made with three concerns for equipment. Even discounting these claims considerably, the interest of the manufacturers in the air cleaner will be manifested this season.

An interesting test was made recently by one company which sent two similar cars across the country, one

equipped with air cleaner and the other not. The cars traveled over the same roads at the same speeds, alternating as to which one led the way. The car equipped with the cleaner is said to have shown much less wear, lower oil consumption and better performance. One manufacturer is now equipping his car with both air cleaner and oil filter and another maker is soon to follow suit, according to reports.

The oil filter is claimed to remove the necessity for refilling the crankcase every 500 miles. This will cut the cost of operation approximately 1/5 cent per mile, it is estimated, on the average car. Furthermore, it is claimed that an additional gain is made because of the better quality of oil fed the bearings.

There are a few experimenters working with oil refining devices in which the exhaust heat is employed to drive off the products of crankcase dilution. A device of this kind would supplement the filter and aid in returning to the engine not only oil free from water, dirt or chips, but oil having approximately the same characteristics as when originally purchased.

The chassis is not receiving all the attention. The automobile bodies of 1924 and 1925 probably will not differ radically from the predecessors of 1923. There are, however, some very definite trends which are likely to become more pronounced as the result of investigations now under way. Indications are that there will be a big increase in the use of all-steel bodies in the next two years. So far, the all-steel bodies have been confined to the lower price classes, but it would not be surprising, in view of the development work being conducted by companies which have specialized in the more luxurious type of body, to find the all-steel body increasing rapidly in the higher price classes.

If color enamels progress in the way that paint and varnish manufacturers are predicting, it will be possible to cash in heavily on the real benefits of all-steel body construction. If it were possible, for instance, to use the high baking color enamels on the parts of the body before they are assembled, body cost would be cut tremendously.

Body Finishing Time Reduced

The two main reasons why it costs so much to finish a body are the length of time and the amount of space required. Space needs are great because the practice has been to finish the body completely assembled. A completely assembled body requires considerable room, and when several hundred are being put through a plant in a day floor space required for the work runs into acreage.

With the assembled body not only can the parts be shipped 35 or 40 to the freight car in place of anywhere between 5 and 10, but in the shop itself the parts handled are so much smaller and less bulky that much space will be saved. Certain colors are already being produced by the baked enamel process and it is probable that during this year, or at least within two years, many more color enamels will be added to the list.

The practical results of the fabric body are difficult to predict. Those who have been experimenting with this type of body state that the greatest skepticism in the minds of automobile manufacturers was in regard to its durability. The only way in which the claims for durability could be substantiated was to put cars on the road in actual practice and to observe the condition of the fabric body after a year or more of service, in which between 15,000 and 20,000 miles of all kinds of roads were encountered.

These bodies have shown a surprising amount of endurance and have interesting possibilities. Methods will have to be devised, however, for bringing down the cost

before they become a large production proposition. As far as silence is concerned, it presents practically an ideal type of construction because of the lack of resonance of the materials employed. It is not at all unlikely that compromise bodies involving the principles employed in both the pressed steel and fabric types will be constructed.

Thus, in surveying the field of possible improvements in automobiles during the next two years, it is possible to see many lines along which developments may be expected. It is certain that higher standards of performance are to be exacted than ever before and experiments already under way are making it apparent that progress is assured along the major lines of development, including performance, riding qualities, mechanical durability, appearance and permanence of finish.

Nickel Increases Hardness of Cylinder Castings

ACCORDING to *Inco*, house organ of the International Nickel Co., the use of nickel cast iron for cylinder blocks and pistons of automatic engines has been developed by the Cadillac Motor Car Co. in an effort to improve the quality of these castings and to secure greater length of service from them. The idea of using nickel in the cylinders was due in the first place to J. J. Wilson of the Cadillac company, and its development has been further promoted by H. B. Swan, superintendent of its foundries.

For the cylinders an iron is used containing from 1.75 to 1.9 per cent silicon and from 1.50 to 2 per cent nickel. Without the nickel addition the Brinell hardness would average from 130 to 150; with addition of nickel the hardness can be increased to 175 to 200. This increase may, of course, be accomplished by other means, but with increased difficulty in machining. Inasmuch as these difficulties are eliminated by the use of nickel, the experience of the Cadillac company has been that it is more economical to secure this hardness by the use of nickel than by other means.

From service tests of cylinders they have found that with the lower hardness a wear of from 0.0015 in. to 0.002 in. was obtained in 20,000 to 25,000 miles and the cylinders would need regrinding. With a Brinell hardness of 175 to 200, however, the cylinders showed a wear of only from 0.00075 to 0.001 in. and did not need regrinding. This company credits this decreased wear not only to the hardness of the iron but also to the fine grain and high luster finish which can be produced with addition of nickel. It has been found that the nickel cast iron cylinders at 200 Brinell hardness machine as easily as the non-nickel bearing ones at 150 Brinell.

For pistons this company uses a 2.50 to 2.75 per cent silicon iron with about 1 1/2 per cent of nickel. Without the nickel the section of 1/8 in. is so thin that the iron would tend even with this high silicon content to be hard and mottled. The addition of nickel prevents the formation of any white iron but produces a fine grain readily machinable iron.

In some recent tests in cooperation with another motor car manufacturer cylinders were cast with the regular mixture to which various amounts of nickel were added. The Brinell hardness values on these cylinders indicate nicely the effect of nickel:

Brinell Hardness

Regular mixture	141
With 0.89 per cent nickel.....	157
With 1.36 per cent nickel.....	170
With 1.89 per cent nickel.....	195

Southern Farmers Want Motor Vehicles for Business Use

Despite small cotton crops in many sections, good market exists for cars and trucks during 1924. Means sought for producing greater yields on smaller areas.

By R. H. Bethea

THAT part of the South known as the "Cotton Belt" should be worked more intensively by the automotive manufacturers of the country in the coming year than ever before.

When the actual financial condition of the farmers in some of these States is considered it seems contradictory to say that they should buy more trucks, tractors and business cars than ever before. However, that is the exact truth.

To appreciate this condition it is necessary to understand the mental processes of Southern farmers. In the first place, they have unbounded faith in their principal crop—cotton. They know that the supply of cotton in the world is short and that the boll weevil, other pests and weather conditions are the only obstacles in the way of profits.

Last season they increased the cotton acreage to such an extent that a crop in excess of anything for years was expected. Predictions reached as much as 13,500,000 bales at one time. This move on the part of the farmer was solely to produce more cotton. Acres of ground that had been used for minor crops or for pasture lands were used and much of this soil naturally was unproductive. These facts show, however, that the farmer was sold on the idea of a large cotton crop for prosperity. The boll weevil, weather conditions and other pests whipped him and on the whole the cotton crop was a failure, insofar as the total number of bales raised is concerned, when the two States, Texas and North Carolina, are left out of the list.

Greater Cotton Production Sought

Entering this planting season the cotton farmers are even more sold on the idea that they should produce cotton than they were last year. They are also sold on the idea that it will take prompt and thorough work to whip the boll weevil and some of the other minor pests. This state of mind has been produced by farm experts, who have shown that to produce a good crop it will be necessary to get the necessary poisons, to plant and till the crops more rapidly and bring them to maturity more quickly. If this is to be done the farmer must give more of his time to watching his crops and less of it to going to and from town in slow moving vehicles. The planter has been taught that if he is to get the best results he must have labor-saving devices. The exodus of negro labor from the South added to the weight of the argument that modern farm methods have become essential.

These are some of the reasons why the minds of the farmers of the Cotton Belt have been prepared for motor trucks and tractors, as well as small cars to handle routine work. It is merely a state of mind, however, and

it will take intensive effort to put across the actual sales.

On the other hand, the farm experts have been trying to drive home the idea that it would be advantageous actually to cut the number of acres planted to cotton and devote the rest to corn. This program is backed up with the plea for more intensive farming.

The automotive industry, fertilizer farm implement industries and the producers of calcium arsenate are indebted to the farm experts throughout the South for their work in the last two or three years, and more particularly in 1923.

1924 Prospects Bright

Summary of the situation indicates that the farmer is looking for a price of 30 cents or more for cotton and that, with faster transportation for men and materials and more effective and quicker cultivation of the land he will be prosperous next year. He is not going to leave any stone unturned to produce a good cotton crop on the smallest acreage possible and at the same time produce the necessary corn for his needs. Consequently this is the best time the automotive industry has ever had to sell automotive transportation to the farmers of the South for their business needs. It is hardly to be expected that they will buy as many cars for pleasure as they did last year.

North Carolina missed the crop failure that visited so many other States in 1923. It produced more than a million bales of cotton worth at least \$175,000,000 for lint and seed. In addition to this it raised good crops of tobacco and other commodities. North Carolina will be among the leading States in agricultural production this year. It has good roads and its people have the money. Naturally the State will be a good market for all classes of motor vehicles.

South Carolina's 1923 cotton crop was about 150,000 bales in excess of the 1922 total and fair crops were produced in other lines. This State should be in much better shape than last year. It was worse off in 1922 than in any of the cotton States except Georgia. The Piedmont section of South Carolina did not suffer as much as some other sections in 1922 and had a good crop last year. This section, which is served by Greenville and Spartanburg, should be a good place to sell cars, trucks and tractors in 1924.

Georgia has the worst conditions in the Cotton Belt. This State has weathered two extremely bad cotton years and has had the largest exodus of negro labor of any Southern State. On the whole Georgia farmers have had a hard time of it.

With practically 3,000,000 people, a large number of whom depend on the cotton crop, the production of a

little over 700,000 in 1922 and just a little more than 600,000 bales in 1923 has been a serious blow to all lines of business. Sales of many commodities have slumped to a marked degree. Farmers believe, however, that their only salvation lies in the production of a good cotton crop and they will buy whatever will help them to do this insofar as they have ability to pay, insofar as they can procure reasonable credit.

Among the counties in Georgia which produced a fair crop this year are: Burke, Carroll, Bulloch, Emanuel, Terrell, Screven, Randolph, Sumter, Hart, Franklin, Bartow, Jackson, Jefferson, Laurens and Elbert. The cotton crop in many of these counties was relatively low, but the total number of bales produced assures the smallest one of them a gross income of at least \$1,650,000. Inability to pay for desired and needed products is the trouble in this State.

Debts Reduced in Alabama

Conditions on the cotton farms of Alabama are decidedly better than in Georgia. Alabama produced a fair crop in 1922 and practically equaled Georgia's crop in 1923. Alabama's 2,400,000 people are not so dependent on cotton as is the Georgia population. The 1922 crop in Alabama enabled the farmers to pay off a large proportion of the debts accumulated in the two previous years. The 813,000 bales produced in 1922 was worth only a very little more than the 1923 crop of approximately 600,000 bales. The cost of producing the 1923 yield was greater, however. Alabama farmers are really in better shape than at the end of 1922, however, as they have paid up a large proportion of their debts. They are in a receptive frame of mind for anything that will help them produce cotton and, at the same time, keep acreage planting down. Roads in Alabama have been improved during the last twelve months and farmers can make better use of light trucks and farm cars. Tractors, if properly demonstrated, can be sold. Alabama really represents the average of the Cotton Belt States this year.

A large part of Tennessee, Mississippi and Arkansas is included in the Memphis territory. This area produced a small crop during 1923 as compared with 1922. Prosperity during 1923 and the latter part of 1922, however, enabled farmers to pay up a large proportion of their indebtedness and gave them a good start last year. For this reason they are not suffering so much at present. Arkansas produced practically 1,000,000 bales of cotton in 1922, while the 1923 total up to Dec. 13 was only 585,982 bales. Mississippi produced slightly more than 600,000 bales in 1923, while in 1922 its yield was almost 1,000,000 bales.

Conditions in Mississippi

A larger proportion of the population of Mississippi depends on cotton than probably of any other State, with the possible exception of South Carolina. Arkansas is not far behind these States in this respect. Each of these sections wants a large cotton yield which will sell for 30 cents or more this year, and they are willing to take a chance with what funds they have and can get to make this desire a reality.

Louisiana as a whole is in somewhat better condition than its neighbor States so far as crop production is concerned. In addition, Louisiana roads have been pushed along faster than in any Southern State except North Carolina. One of the national highways that runs entirely across the State has been completed. A good many sales of motor vehicles to new owners should be made in Louisiana during the present year.

Texas is in such flourishing condition that little need

be said about the excellent opportunities for selling farm trucks, tractors and cars. The Texas cotton crop, including seed, was worth at least \$650,000,000 gross and possibly as much as \$700,000,000. Nueces County alone produced almost 100,000 bales of cotton. This county is located toward the extreme southern point of Texas and Corpus Christi is the county seat. A large part of the population of Texas will be out in the cotton fields this year trying to make another record.

The cities and towns of the South depending on industrial activity probably will not be quite as good markets for cars this year as they were the first part of 1923, but signs of improvement are now evident in many of the industrial areas.

Lumber, one of the leading products, has improved in price for more than a month and it begins to be evident that the demand for this commodity will be better during the first part of 1924 than it was during the latter part of 1923, but not up to the first half of 1923. Improvement in lumber is an important factor in prosperity for a large part of Mississippi, nearly all of Louisiana, a large part of Arkansas and Alabama, the northern part of Florida, the southern part of Georgia and the eastern part of Texas, as well as for some scattered sections in Tennessee, north Alabama and a large part of North Carolina. Many cities are affected by the lumber market; notably Memphis, New Orleans, Jackson, Miss.; Pensacola, Fla.; Bogalusa, La.; Birmingham, Mobile, Ala.; Houston, Beaumont, Texas; Little Rock, Ark., and a large number of smaller towns.

The position of the Southern textile industry is well known throughout the country. In actual operations this industry is now leading that of New England. Most of the mills of the South are in a rather strong position and productions will be sufficiently large, no doubt, not to impair the purchasing power of the communities dependent on this industry.

Industrial Areas Prosperous

The iron and steel industry of north Alabama and east Tennessee, together with coal and other mining operations, is showing the improvement which is reflected in the increased prices asked for pig iron in the last two or three months.

The entire South is in the position of the business man who sees large profits if he can just spare the capital for investment. That Southerners will invest to the limit of their ability is evident; that they will buy everything which gives them the remotest chance to whip the boll weevil and make a good cotton crop is patent.

The matter just comes out at the end with the observation: The Southern farmer will buy trucks, tractors and cars for use in the business of farming if he can see his way clear to pay for them, because he wants to use them in his efforts to produce cotton more quickly and more economically.

IN some work on the determination of the wear of metals conducted by the Bureau of Standards it was found that a considerable difference in the rate of wear resulted when the abraded particles were removed from the test specimen and when these were allowed to accumulate. A device designed for cleaning the specimens during a run has been tried out and proved quite successful. The previous results as to the difference between rate of wear when the particles are removed and when they are not were corroborated. When these particles are removed the amount of wear is so small in some cases (two or three milligrams per hour) that it will be necessary to make runs of several hours' duration in order to get comparative quantitative data.

New Columbia Axles Designed for Use With Four-Wheel Brakes

Steering knuckle is reversed Elliott type and is formed with circular flange to which brake cover plate is secured by six rivets. A feature of rear axle is the one-piece gear carrier. Bevel pinion forged integral with shaft. Shoes are aluminum.

INTERESTING features are incorporated in the new axles made by the Columbia Axle Co., Cleveland, Ohio. The type used on the new Elgin car is typical in most respects of the Columbia units which have been installed recently on several cars which have adopted four-wheel brakes.

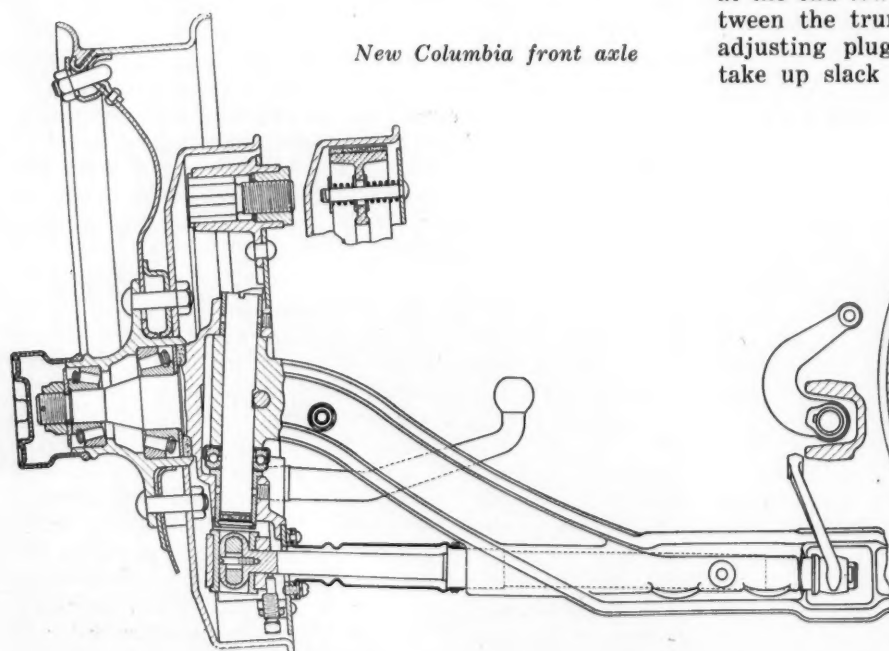
Referring to the drawings of the front axle, the brakes are of the internal type, the shoes or sectors being anchored at the top and applied to the drum by means of a cam at the bottom. The cam is carried by a shaft which is supported in bearings in the axle forging at its middle and inner end but unsupported at its outer end. The axle center is of the usual I section except for a recess on the forward side directly inside the spring pads, in which is located the hub of the lever arm on the brake-operating camshaft. From this point outward the section of the axle is modified so as to accommodate the brake camshaft, which passes through a drilled hole concentric with the middle portion of the axle. Besides, from the spring pad on outward the upper flange of the axle is widened, and these two modifications of the axle section add considerably to its torsional strength.

The steering knuckle is of the reversed Elliott type and is formed with a circular flange to which the brake cover plate is secured by six rivets. Bosses are forged on the knuckle into which the steering arms are fastened by means of tapered and bolted joints, the axis of these joints

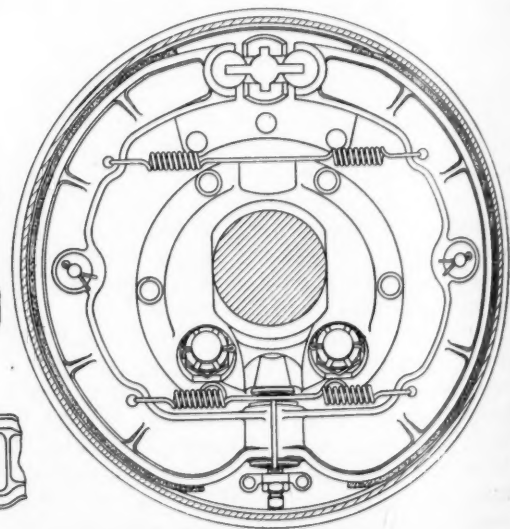
being parallel with the knuckle spindle. It will be seen that the load on the axle is transferred to the knuckle through a ball thrust bearing. The pivot pin is fast in the axle end, and hardened steel bushings are inserted in the knuckle to form bearings for the pin, which is inclined at such an angle as to bring the intersection of its axis with the ground close to the center point of contact between tire and ground.

The two shoes of the brake are made of aluminum. They are anchored at the top by means of a device which permits of adjustment for wear of the lining. The upper ends of the shoes are provided with lugs, of which a portion has been cut away, and in these lugs are located trunnions which are provided with longitudinal slots or keyways the depth of which varies from one end to the other. Into these slots extend tapered keys on an adjusting plug mounted in a hub riveted to the brake cover plate. This hub or adjusting plug guide extends through the cover plate and the portion inside the cover is cut away on both sides, so as to allow the tapered keys of the plug to enter the slots in the trunnions. The adjusting plug also has two other keys, located in keyways in the guide, which prevent it from rotating in the guide.

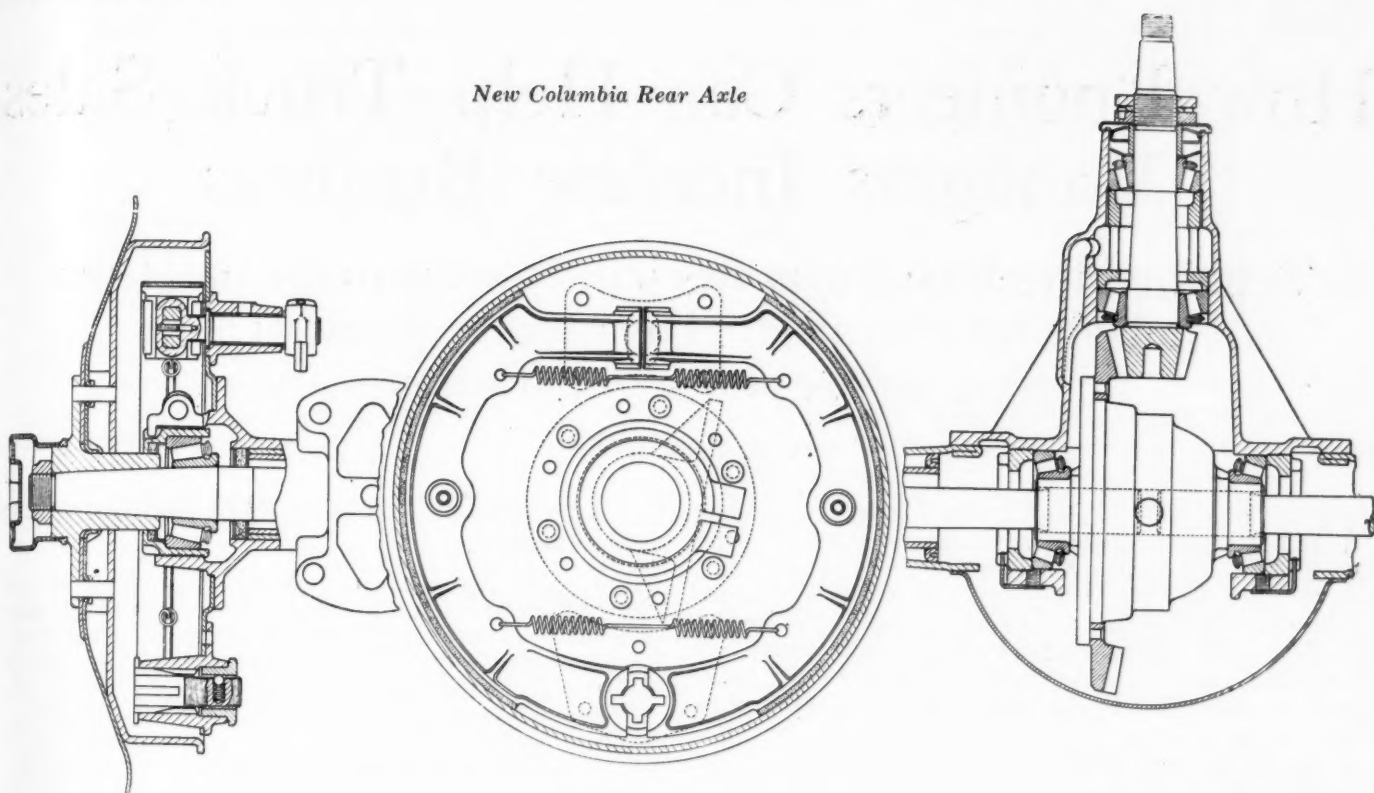
Coiled retraction springs draw the two brake shoes away from the drum and press their ends against the trunnions, and the latter against the tapering keys or wedges of the adjusting plug. The wedges are deepest at the end toward the road wheel and the intersection between the trunnions and the wedges tends to force the adjusting plug in the direction toward the wheel. To take up slack in the brake resulting from wear of the



New Columbia front axle



New Columbia Rear Axle



lining requires moving the adjusting plug in the opposite direction, and this is accomplished by means of a threaded sleeve in the outer end of the guide.

At the middle of their length the brake shoes are guided by studs riveted into the brake cover plate, between two washers and two coiled springs on these studs, as shown in the detail drawing.

The lower ends of the brake shoes end in half hubs with a radial axis, which are lined with hardened steel half bushings, and it is against the interior surfaces of these bushings that the brake-operating cams act. The axes of these hubs coincide with the axis of the knuckle pivot, hence rotation of the knuckle around its pivot does not affect the relation of the cam in the brake shoes.

The cam itself floats in the head formed at the end of the camshaft, which head is slotted for the purpose of receiving the cam. In order to prevent loss of the cam when the shaft is removed from the axle, the floating cam is drilled through its center and a headless screw is passed through it and screwed into the shaft, the hole through the cam being of considerably larger diameter than the screw, so that the cam is not restrained by the latter. With the cam floating as described, equal pressures will at all times be exerted against the ends of the two brake shoes, and the shoes will be applied equally to the drum.

Maximum Wheel Lock Allowed

The camshaft passes through a slot in the brake cover plate with a sufficient clearance to allow for the maximum lock of the wheel. A leather boot extends from this opening to the bushing in the outer end of the brake shaft channel in the axle, hence there is no chance for dust and dirt to enter the brake drum through this opening.

The axle here described has a section $1\frac{3}{8}$ in. wide by $2\frac{3}{8}$ in. high. Its center is dropped 4 in. below the spindle axis and it is designed for $26\frac{1}{2}$ -in. spring centers. The lever arms on the spring shafts are curved so the rods connecting to them come very close to the inner sides of the front springs.

The brake drums have an internal diameter of $13\frac{5}{8}$ in.

and the brake shoes are $1\frac{5}{8}$ in. wide. The drums are flanged on their open side for stiffness.

The rear axle is of the semi-floating type with a pressed steel housing. A feature of this axle is the one-piece gear carrier. It will be noticed that the bevel pinion is forged integral with its shaft. Back of the pinion is located a taper roller bearing taking the forward thrust due to the pinion, the outer face of which bearing abuts against an adjuster that is screwed into the gear carrier casting. Forward of this adjuster is another roller bearing which takes rearward thrust. The inner race of this bearing is backed up by another spacer on the pinion shaft, and this is followed by an adjusting nut and locknut. Attention may be called to the method of conducting oil from the differential housing to the forward bearing on the pinion shaft, for which purpose an oil duct is formed in the gear carrier.

Roller Bearings on Differential

Taper roller bearings are fitted at both sides of the differential, the bearings as well as the mesh of the bevel gears being adjusted by means of threaded rings on the outside of these bearings. These rings are provided with jaws on their outer faces between which a locking finger secured to the gear carrier is adapted to engage.

To the outer end of the axle housing is secured a combined spring pad and bearing housing, with a flange to which the brake cover is riveted. The bearing housing portion of this casting is internally threaded and split at one part of its circumference, and a bearing mounting sleeve is screwed into this housing and clamped into place. This mounting sleeve also serves as bearing adjusting nut. There are felt washers at both ends of the bearing housing and loss of lubricant from the axle housing is therefore doubly guarded against. The wheel hub is secured to a tapered section of the axle shaft and held in place by a key and nut, which latter is covered by the hub cap in the usual manner.

It is not necessary to go into the design of the rear wheel brakes, as these are practically identical with the front wheel brakes. Attention may be called to the ball locking device of the adjusting nut, however.

How Engineers Can Help Truck Sales Managers Increase Business

Training of technical man fits him to solve many problems outside his own field. He can give practical aid in sales, service and transportation work.

By Edmund B. Neil

THE value of the engineer in the ever-widening field of business endeavor is fast being recognized. His method of attack and analysis of problems well fits him to the solution of not only those of a strict engineering nature, but also gives him the ability and confidence to work out many of the complex difficulties encountered outside his own field. Most business problems are susceptible to the same methods of deduction and solution which he customarily applies once the facts are known and with fundamental information available a satisfactory solution is almost inevitable.

No real engineer can become all that he might be unless he possesses or acquires some degree of salesmanship and conversely a sales executive cannot direct a selling organization to best advantage, particularly in the motor truck field, unless he either possesses or avails himself of that particular type of ability which constitutes an almost inherent part of an engineering training.

The engineer's greatest handicap does not lie in his inability properly to interpret the facts, but in so presenting his conclusions that they will be intelligible and acceptable to the executive who, though usually well informed as to the details of his own business, is not familiar with the most common methods of presentation used by the engineer. In other words, he often has some difficulty in "selling" his ability and work to the sales executive. Diagrams, charts, tables, etc., as well as the language and tenure of all material presented, must be so drawn and written that it readily can be understood. The engineer must think and act in the terms of the business man if he is to be successful and appreciated.

The purpose of this article is to show the general application of engineering ability to the many sided problems of the sales executive, wherein the engineer can be of assistance and how valuable results may be obtained.

I. PREPARING "TALKING POINTS."

The engineer who has familiarized himself with the product of his company and at the same time is acquainted with commercial practice is in an excellent position to present and explain in non-technical language any particular features in the design of the truck as well as to describe in form usable by the salesmen and executive any manufacturing processes which may assist in showing the usefulness or economy of the truck as a transportation medium.

"Talking points" for the salesmen in either lecture or bulletin form are of value in establishing the confidence necessary to finally closing a sale. The engineer often can render very practical aid in presenting data of this kind in a clear forceful manner.

II. ASSISTANCE TO ADVERTISING DEPARTMENTS.

Unless the performance of a motor truck verges on the spectacular, the fact that on a certain job it may have made a very commendable record is likely to be overlooked not only by the average onlooker but by the advertising man himself. And at best the glamour surrounding other forms of "stunts" can hardly be approached by the slow moving heavy duty vehicle. Yet there are many instances wherein the motor truck really accomplishes record performances which can best be determined and described by the engineer.

Much interesting and instructive material can be prepared by the engineer which in turn can be used as a basis for "copy," folders and pamphlets by the advertising department. A little more "engineering" in some of the automobile and truck advertising copy appearing in news and trade papers would help to raise it above the meaningless "weak stuff" that it many times is. At least it would have one kind of an appeal which so much of it does not now have.

III. ASSISTING SALESMEN.

On many prospective sales, particularly those to corporations having their own engineering forces, the salesman can be greatly helped by an engineer who is also familiar with sales methods. Instead of harming the salesman's arguments he can talk intelligently about mechanical features, theoretical problems and many other similar subjects concerning which such corporations must be entirely satisfied before a sale can be consummated.

The right kind of engineering ability will act as a background of fact upon which the salesman can lean when necessary. It is far better that a salesman do this than to attempt to discuss engineering problems himself without the required fundamental knowledge.

IV. SELLING SERVICE.

Nowadays when maintenance service means so much in promoting motor truck sales, the engineer often can be of value in discussing service problems with the customer, not only in satisfying him as a basis for repeat orders, but also in assisting the service manager to sell the customer an overhaul job particularly when the service manager himself may have been previously handicapped, due to any of the unfortunate circumstances oftentimes beyond his control.

Just as "salesmen travel by twos" the engineer and service manager may form a combination which can "put over" many a satisfactory arrangement for taking care of the customer's maintenance work. By so doing

the sales executive and salesman are aided, since good service means more truck sales.

V. REPRESENTING THE CUSTOMER.

The engineer who familiarizes himself with the problems of the sales executive and the customer as well is in an excellent position to "represent the customer" when changes in design or manufacturing methods are under consideration.

No engineering department can afford to overlook the customer in present-day design practice. His requirements as to economy of operation, load capacity, accessibility, etc., must be met if a salable and serviceable truck is to be the result. The engineer who is "in the field" thus can best present this angle to those who for obvious reasons may not be able to keep in intimate touch with users of commercial trucks.

VI. TRANSPORTATION ENGINEERING.

To the engineer who studies the problem of motor truck operation there is an almost unlimited field of activity. Commercial trucks are or should be sold today on a basis of economical transportation. This branch of engineering endeavor is in reality a specialized activity itself and is mentioned here merely to again show wherein the engineer can be of immense value to those selling motor trucks.

These six instances of the engineer's value to the sales executive involve the use of direct engineering training and experience with, of course, some knowledge of salesmanship. They are not by any means the limit of the engineer's ability to apply the processes of analysis and study with which he is accustomed to deal.

By virtue of the methods he ordinarily uses in locating and establishing the facts in a mass of questionable information, his scope of service to the sales executive is far more important and valuable. The engineer's method of attack can be just as well if not better applied to business and sales problems than to the solution of theoretical engineering questions.

VII. SALES ANALYSIS.

By a close scrutiny of sales statistics and the application of usual procedure in interpretation and presentation of results, the engineer can do for a particular sales organization what the statistician can do for the bank or other business institution. In fact, he may be better able to present intelligently and discuss his conclusions than the statistician who, though correct in his information, is often handicapped by not knowing how to clearly and simply chart or tabulate the figures he has deduced.

VIII. PERMANENT ASSOCIATION WITH THE SALES DEPARTMENT.

A correct and intelligent interpretation of any analysis, whether it be concerning sales or some other branch of business, can be secured only by a thorough familiarity with the particular organization for whom the analysis is made. This can be gained only through an intimate and open contact and association with its members. Hence the sales executive must have the engineer "on the inside" with him if his results and assistance are to be of value.

The application of "general rules" by consultants temporarily employed is not often successful unless they, too, are given a free hand for their investigations and are allowed sufficient time to work into the many details of the business under consideration. General rules cannot be applied correctly without a careful and thorough study of the individual case. A correct diagnosis

not only requires skill and experience but the "patient" must be willing and desirous of help if valuable time is not to be lost. The "family doctor" is "on the inside."

IX. BUSINESS SUPERVISION.

The engineer particularly is able to assist in the general supervision of a business institution:

- (a) Because he insists upon facts as a basis for all decisions.
- (b) Because he is likely to be more deliberate and careful in acting once such facts are established.
- (c) Because he often may act as a conservative or stabilizer in a business where careless decisions may be disastrous.

X. OFFICE MANAGEMENT.

Since costs are the basis of much of the engineer's work, he often is able to assist in the determination and allocation of selling, advertising and manufacturing costs.

In the direction of office routine, its development and adjustment to expansion of business activity and conversely its elimination where useless and obsolete are all well within the field of the engineer's activity as an analyst and supervisor.

XI. MOTOR TRUCK OPERATING COSTS.

As mentioned before, the study of transportation engineering is a specialized field in itself, but it is well to note that this also involves a knowledge of costs and depends largely upon their correct interpretation for a correct and usable conclusion.

In all the activities the engineer is capable of assuming he needs to possess some knowledge of salesmanship and to be broad enough to apply his training in branches of activity other than pure engineering.

Stern Action Is Urged to Banish Death from Highways

(Continued from page 498)

legislatures enact laws to provide for such impounding. Many a man who would be indifferent to a fine would miss his car most keenly.

The point might also be raised that the care of impounded cars involves a problem and that it might be difficult for police authorities to find adequate storage space, or to assure return of the cars to their owners in first-class condition. Our plan does not involve any municipal pound. We would do one of two things:

Either tie up the car in the owner's garage with police seals attached, or impound it in a public garage, at the owner's expense, also with police seals attached. At the end of the penalty period the police department would remove the seals and permit the car to be used once more.

We believe that coordinated action can accomplish a notable improvement, but if the combined results of all our efforts should be but the saving of one life a day the country over, the work would be well worth while. We shall spare nothing in effort. We will cooperate unselfishly. We want to do something big for that public which has dealt so generously with us.

It is our hope that the friendly, warning hand of education may suffice to banish death and disaster from the ways of traffic, but if it be necessary to summon the sterner weapons of punishment we shall advocate their use without stint or favor. No good citizen can rest content until safety reigns supreme on every street and highway.

Twenty-three Balloon Tire Sizes Add to Burden of Tire Industry

THE prospect of having to make and sell in addition to their present line over twenty new balloon sizes is far from alluring to tire producers and dealers. Tire interests claim, however, that they were forced into this situation by insistence of various car manufacturers on particular sizes which, according to the tire producer's view, are unnecessary.

However this may be, the Tire Manufacturers Division of the Rubber Association has approved a list of 23 sizes of balloon tires as shown in the accompanying cut, apparently thinking it better to adopt a full range of sizes rather than approve them piecemeal in accordance with the request of individual makers, many of whom have in hand already inquiries for a large percentage of all sizes on the list.

THIS has been done with a full realization of the complication and expense which it will involve in the tire factory and in the tire dealer's business, but is justified on the following basis: An automobile company, for example, which buys 200,000 tires a year and distributes its product throughout the country, asks for quotations on its tire requirements for the coming year. The prospective buyer insists upon such and such a size which the tire manufacturer had not intended to make but which will be obtained elsewhere if he refuses to make it. In the latter case the particular tire builder will lose replacement business as well as the original equipment. On this account he is practically forced to make any size which another manufacturer makes for a large car producer. Otherwise he puts his dealers at a disadvantage.

It is recognized, of course, that the car manufacturer always will insist on adopting a tire which will meet the particular conditions of his product and still permit minimum expense for changes in other parts of the car, but apparently the added cost to the tire manufacturer is lost sight of by the car manufacturer. The latter seems to forget that, in the long run, either he or his customer, the car owner, must pay the excess cost in higher prices for tires.

During the last few years the number of tire sizes commonly used as original equipment have been reduced to about eight or ten. This has been advantageous to the tire dealer since it reduced the number of sizes he had to stock. In spite of this fact the average tire dealer has been far from prosperous. Many prominent dealers in New York recently have taken on a line of radio equipment

in the hope of making up their losses on tire business through profits in the new line.

To them the prospect of a greatly increased stock of new balloon sizes is most distressing and the question will be complicated further if, as some expect, the size of tire first adopted by certain car makers is later changed in favor of another size instead of the change from regular cords to balloons being made in a single step.

MOST of the leading tire manufacturers and many of the smaller producers have decided to follow Michelin's lead in bringing out a set of balloon tires for existing standard rims. There also is much interest in Michelin's recent announcement that they are now distributing a balloon tire designed to fit 30 x 3½-in. clincher rims. It is believed that other makers also will bring out a clincher balloon of this size, even though there is a disposition to get away from clincher tires in this country.

The matter of inflation pressures for balloon tires still remains unsettled, so far as definite official action on the part of the Rubber Association is concerned, but it is expected that the subject will be thrashed out at a meeting of the Tire and Rim Association early in March.

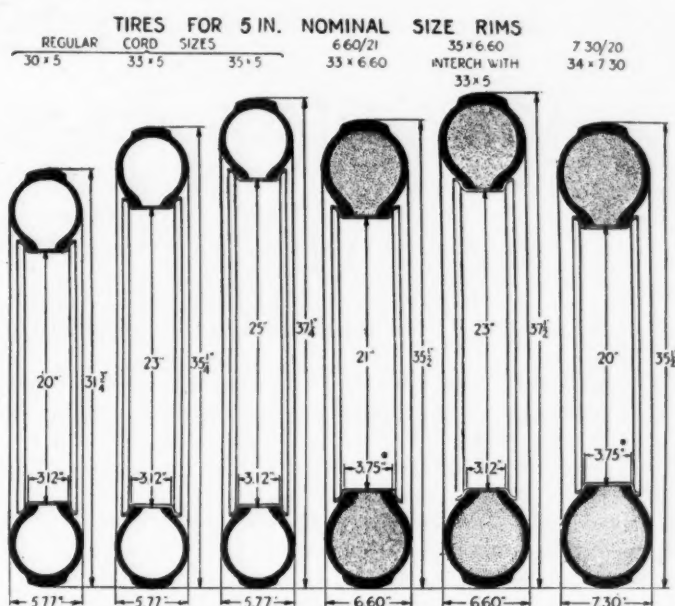
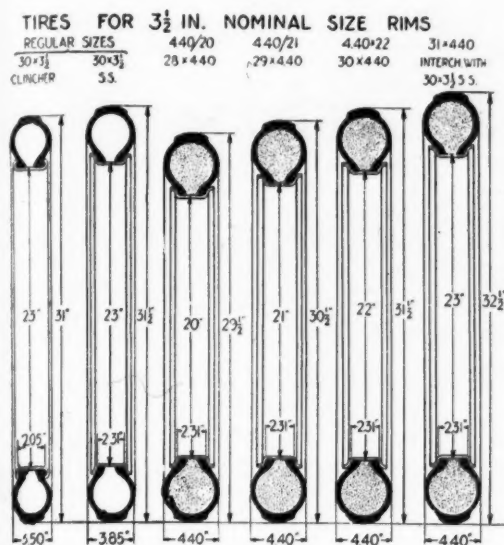
A majority of tire manufacturers are expected to confine their production of balloon tires, for the time being at least, to sizes intended for replacement on existing standard rims and to the five sizes for 20- and 21-in. rims first approved by the Rubber Association. Later production schedules naturally will depend upon sizes demanded for equipment and replacement purposes.

DODGE BROS.' formal announcement that the Dodge car will use a six-ply tire of 5.77-in. section on models carrying "balloon equipment" is creating some comment. Most balloon tires are four-ply and Dodge is known to have tried out four-ply balloons, but is understood to have found that they puncture too easily. A six-ply tire is said to have been selected to overcome, in part at least, this disadvantage.

Advocates of four-ply balloons contend, on the other hand, that this variety does not puncture more easily than the six-ply **providing it is run at a correct inflation pressure.** It is contended that too high inflation pressures result in too high unit pressures between tire and pavement and greater susceptibility to puncturing, regardless of the number of plies.—H. C.

Dimensions of Standard and Balloon Tires

(Drawn to scale to afford comparison between present popular sizes and balloon sizes recently approved by the Rubber Association.)



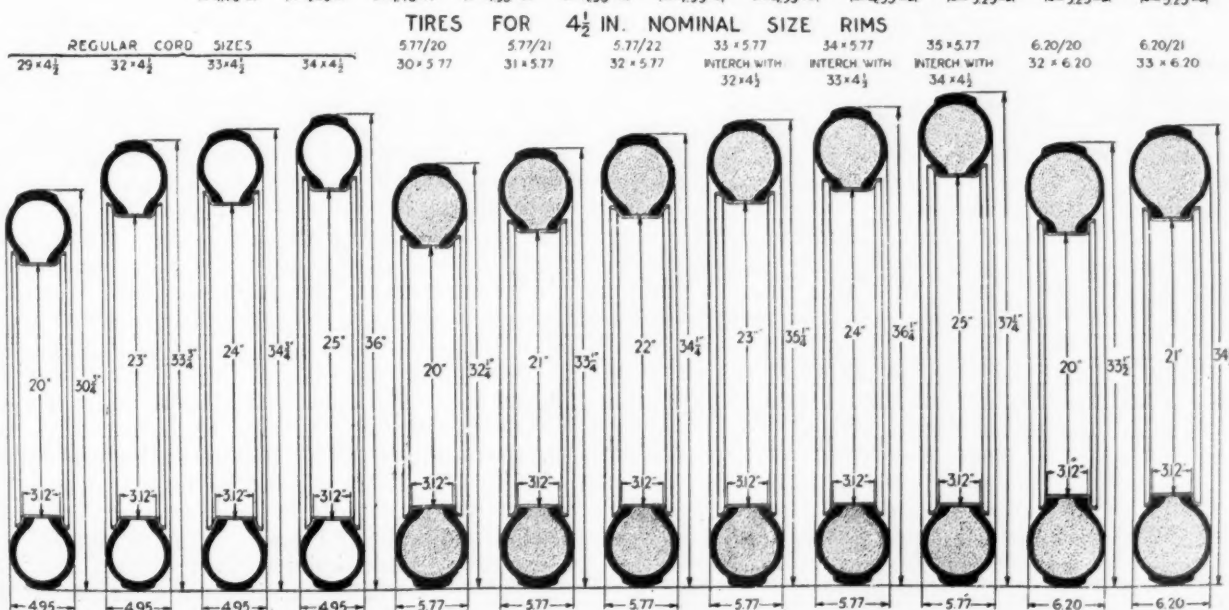
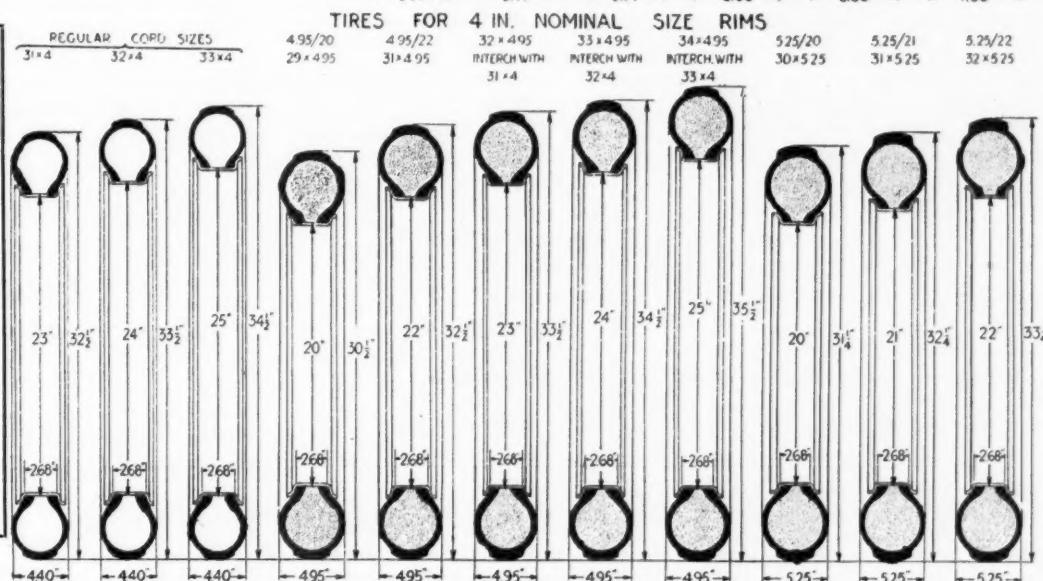
NOTE

Tires which are stippled are balloon sizes approved by the Rubber Association Feb. 6, 1924.

Approved nominal size marking is given above each tire.

Figures for outside diameter of tires are approximate and vary with make of tire, thickness of tread, etc.

* Starred size is width of 5 in. rim having a flange height equal to that of a 4½ in. rim.



Philippine Islands Offer Good Market in 1924

Overstocks piled up in 1920-1921 have been disposed of and banks are in excellent condition. Sales vary with service provided. Imports are increasing.

By Walter Robb

Secretary, American Chamber of Commerce, Philippine Islands

THE year 1924 opens in the Philippine Islands with a very promising prospect for automotive business, particularly in American cars, for while the islands remain American territory trade between them and the United States constitutes *domestic trade*, free from tariff charges. The Philippines suffered the slump of 1920-21 in common with other regions of the world. This slump was most keenly felt, of course, in the motor trade. Agencies found they had more than anticipated the needs of their customers and that they would have cars on their hands for some time. But generally speaking these agencies were well financed and they weathered the storm.

The first half of 1923 saw the glut worked off the market. With the latter half of 1923 importations on a normal scale began and will continue to increase steadily, it may be predicted, throughout 1924.

One fundamental reason why the market will be steadily better in the Philippines is that the banks are in better condition. During 1923 exports were heavy. A favorable trade balance of some \$33,000,000 piled up to help the islands, but profits were taken over to a very considerable extent by the banks in payment of overdue paper of merchants, farmers and planters. This fiscal hole now is largely filled; men making money will have margins to spend. More men will buy cars. Former owners will sell or scrap old cars and lay in new ones. This will be the trend of the trade, a fact evidenced every day in Manila by the appearance of new and higher-priced cars.

Money Available for Buying

Philippine Islands are more nearly approaching supplying their own foodstuffs than ever before; are steadily developing their main exports—sugar, embroideries, tobacco and cigars, copra and coconut oil, hemp fiber and cordage, under the stimulus of good prices. Land tenure and labor conditions are such that there is comparatively a general distribution of profits from farm and mill and the Filipinos have a growing sum of money in their pockets to buy what they want.

Such a country is the Philippines, and one of its chief wants is motor cars and trucks. As in other countries, for some the satisfaction of this want is a luxury; for others a necessity. More and more in the Philippines the motor vehicle is becoming a necessity, especially among the large plantation class producing crops that go into the export market. This group buys low- and moderate-priced cars for its ordinary needs in the provinces. But the prosperous planters move to a port city, usually to Manila, and buy a home where the family may live during the years the children are

in college or finishing school. For the family's city needs he buys a better car.

Transportation is a problem in any country; it is a particularly exacting one in an archipelago, where, at the natural boundaries of the sea, all roads come to an abrupt end.

Transportation Difficult Problem

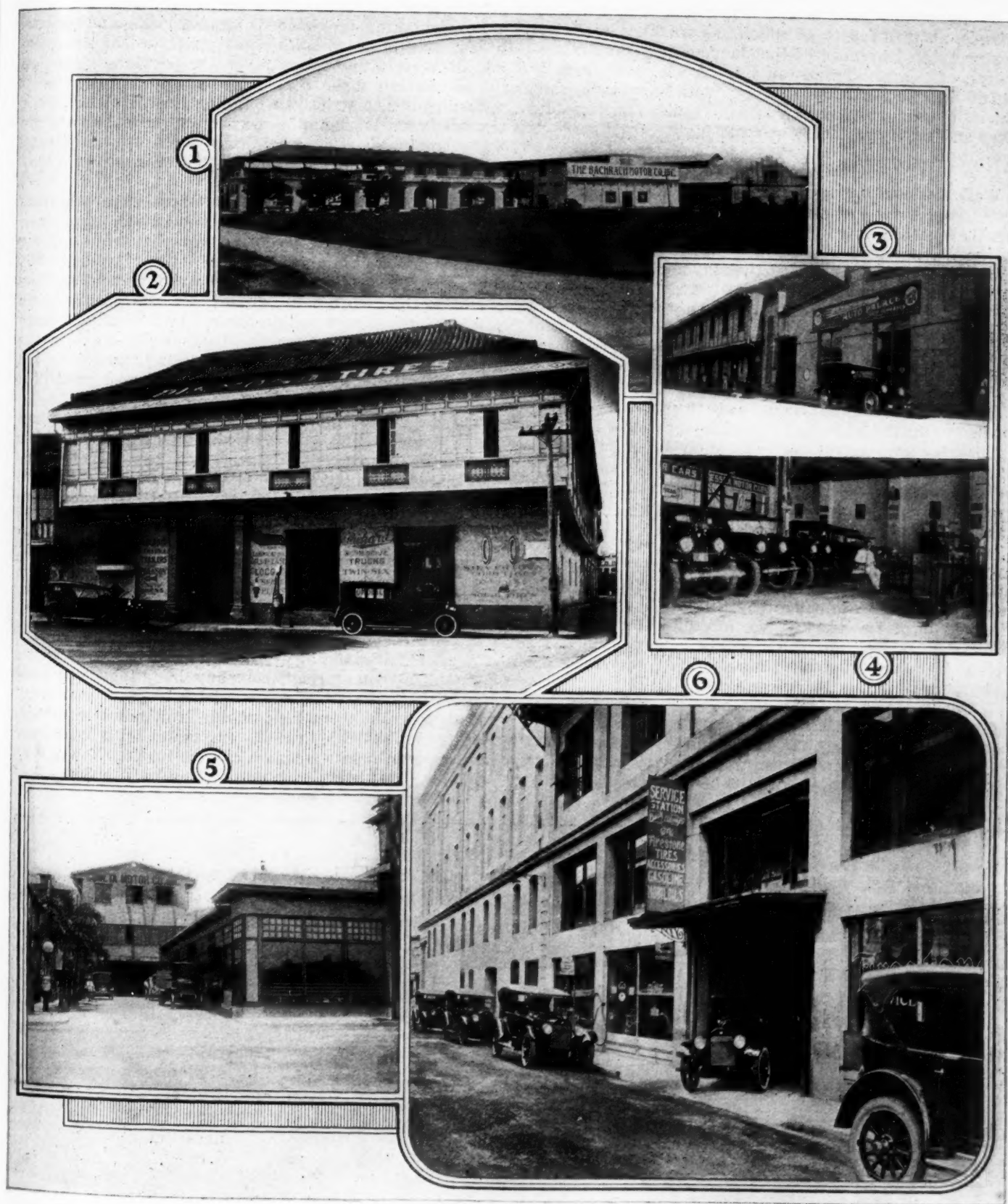
The Philippines, being a tropical archipelago, with long, rainy seasons yearly recurrent, have special phases added to their transportation problem. But the foundations of a good road system were laid in the administration of the Honorable W. Cameron Forbes, formerly governor-general and recently a member of the Wood-Forbes Mission, which investigated conditions in the islands for President Harding. The system is divided into first, second and third class roads. The third class roads are poor in the rainy season; they are graded, but not surfaced, and are maintained upon the slender revenues of municipalities. Second class roads are higher grade and are better maintained by municipalities and provinces.

The first class roads are surfaced. They are built and maintained by the insular government and the provinces, the law providing for their construction also providing for their maintenance. Of this class of roads, good at all times in the year, there is now a total of some 5000 kilometers in the islands. The principal islands, Luzon (of which Manila is the port, insular capital and metropolis), Cebu, Panay and Negros, have networks of good motor highways. On Luzon the system now is being extended into the great Cagayan valley of the north, the tobacco region, and very soon it will be possible and pleasant at all times of the year to motor from Manila to Aparri, the north port, on the Cagayan River, a round trip involving 1000 miles of travel.

Insular road systems are supplemented in progressive provinces (many of them on Luzon) by provincial road systems, the insular highways being trunk lines. Over these highways, passenger and freight motor vehicle lines are operated, carrying passengers and products to provincial markets and to railway stations. It is by this means, chiefly, that the farm and plantation products of the Philippines reach the primary markets, save along the coasts, where small sailing craft operate in the same commerce. Because of greater efficiency, motor transportation is distancing the sailing-craft business.

Spite of Kipling's oft-quoted dictum, America has succeeded in hustling this corner of the east to the point where time actually counts to the inhabitants, who are wideawake people imbued with the spirit of progress. The good roads program is on a sound economic basis.

Typical Automotive Establishments in the Philippine Islands



1—Sales and service buildings of the Bachrach Motors Co., Inc.

2—The Parsons Hardware Co.

5—An unusual construction features the Luneta Motor Co., Inc.

3 and 4—The Estrella Auto Palace (Levy Hermanos), showing exterior and interior.

6—The Pacific Commercial Co.

The work is strictly that of the local government, operating independently. The Philippines are not foreign-concession areas; taxes are voted for roads because the people believe in them and will buy them for themselves.

There are now more than 14,000 motor vehicles in the islands, about a fourth of which are trucks. Steel tires are prohibited because of the damage they do the surfacing of roads. Trucks outside of the ports usually are of light capacity and equipped with pneumatic tires, since the gravel and shell surfacing is hard on the solid tires and makes replacement costs high.

Well-Equipped Garages in Cities

Well equipped garages are to be found in the port cities, and some are conducted by transportation lines for their own company use. At provincial capitals and market centers, too, there are generally fairly well equipped small shops. Nevertheless, outside of the port cities reliable repair work is not always to be had. One thing greatly lacking in the trade here is well stocked garages at provincial points, and provincial agencies with good stocks of spares and accessories. Cars having the best sale are those which provide the greatest amount of these necessary services.

But such connections are not easy to establish, because commerce in the provinces is so largely in the hands of Chinese general merchants who know little or nothing of the motor vehicle business. A gradual improvement is being made in this respect, however, as an increasing number of Syrian merchants and of young Filipino mechanics and electricians are starting places of their own.

About half the automotive vehicles in the islands are owned in Manila. One garage having the hotel trade operates more than 100 cars; smaller ones have 10 to 20 each. Used cars are bought by Filipino chauffeurs and licensed into the street trade, affording American soldiers and sailors and the Filipino general public far better transportation than the old-time *carromatas* and *calesas* that are still very numerous.

Mercantile houses in Manila quite commonly operate on overdrafts at the banks, balances on which interest is paid fluctuating with the day's business. Automobile houses are no exception to this rule. Although the 1920-21 pinch was severe, recent increased imports indi-

cate restored confidence not only in the trade, but among bankers as well. Bankers will accept good import paper for reputable clients, meet the drafts, and allow goods to be handled on trust receipts until the account is cleared, deposits being made as sales are effected. These conveniences of banking are for picked firms, naturally.

Beyond taking care of loans already made, and for purposes of liquidation with some profit or the minimum loss, banks are not operating in the provinces. Foreign banks can not make real estate loans, and plantation financing is not strictly a banking business because it ties up funds too long. Foreclosures on real estate are made only with difficulty. Many titles are in dispute, with the work in connection with the lands generally much behind the times.

Chinese and Filipino capitalists loan in the provinces at high rates, and in Manila money is 12 per cent a year, on good security. Were it not for the fact that the country is very largely drained of its profits each year, a condition ascribed many times to the uncertainty surrounding the future political status of the islands, there would be much more rapid progress in all lines. Definite action at Washington on the part of Congress in the direction of laying down economic development as the basis, would certainly make the Philippines a great field for the American automobile.

There are no finance corporation in the Philippines for discounting the notes covering sales of automobiles on credit. The agencies carry this paper themselves, and therefore must know whether or not their customers are good. They also must see to it that their customers do not buy cars beyond their means. Most sales are on credit, some companies requiring a very substantial initial payments, others making the initial payment quite low; and all this depends somewhat upon the purchaser's credit rating.

Dealer Influence Strong

As elsewhere, the older a firm is, the better it knows its public. One foreign company handling some good standard American cars has been in business thirty years. Seemingly the head of this firm knows everybody.

He practically dictates to customers what cars they shall buy. A man wanting a car costing \$3,000 will very probably drive away with one costing only \$1,750. This

Manila importers handling motor cars, together with the agencies or makes of cars represented:

Bachrach Motor Corporation

Cadillac

Nash

Stearns-Knight

Overland and Willys-Knight

White Trucks

Estrella Auto Palace (Levy Hermanos)

Hudson

Dodge

Essex

Denby Trucks

Federal Trucks

Mack Trucks

Twin City Tractors

Pacific Commercial Company

Buick

GMC Trucks

Holt and Cletrac Tractors

Luneta Motor Company, Ltd.

Chandler

Maxwell

Chalmers

Bethlehem Trucks

Parsons Hardware Company

Packard

Hupmobile

Philippine Motors Corporation

Lexington

Studebaker

Auburn

Clydesdale Trucks

Master Trucks

All-American Trucks

U. S. Trucks

La Crosse, Case, Altmann-Taylor, Hyder, Flower City Tractors.

Manila Trading and Supply Company

Ford

Lincoln

Ford Trucks

Fordson Tractors

Salmon and Dexter

Avery Tractors

Catton-Neill Engineering Company

Best, Moline and TK Tractors

Juan Ysmael and Company

Hart-Parr, Waterloo Boy and

Bates Steel Mule Tractors

paternalism is very much a part of good business in the Philippines. The provincial customer appreciates business advice from the Manila dealer, and will go where he can get the honest variety. The long liquidation period, by the way, was an effective weeding out process, leaving in the commercial field chiefly those concerns of good reputation.

Salesmen are bright, young, educated Filipinos, under an American sales manager. These young men speak and write English, Spanish and several dialects. They get about a great deal socially, and through gossip come to know their prospects. Their advancement depends upon their recommendations being sound. They thrive on competition, which is the very breath of life to the aspiring Filipino.

During the boom period, when prices of sugar and all agricultural products soared, and with them prices of work carabaos (water buffalo), tractors sold faster than they could be brought into the islands. But presently they were out of commission and, there being no repair service, they were laid up in fence corners. Now they are being pulled out again, with better service furnished and more knowledge of mechanics among plantation personnel.

While the carabao remains a strong competitor of the tractor and it will be many years before they scare him out of the sugar fields entirely—certainly never out of the rice fields—nevertheless the arc of tractor use in the Philippines will gradually rise. The tractor plows fields excellently, and the carabao can be utilized for cultivating and crop hauling.

Sugar harvesting and rice cutting and marketing come in the months from November to April inclusive. Hemp is cut, stripped and marketed throughout the year. It is not grown extensively in the rice and sugar provinces. Cocoanuts also are marketed quite regularly throughout the year. In the hemp and coconut regions, therefore, there is little fluctuation in sales, but in the rice and sugar regions the November-April period is the time to sell cars. Generally speaking, these latter provinces have the best roads; payments come in larger sums than in coconut and hemp growing sections, and more traveling about is required. Rising motor car sales toward the close of 1923 presaged prosperity in the rice and sugar regions.

Accessories are in some instances handled apart, but are at the same time quite largely in the hands of the car dealers. It need hardly be mentioned that closed cars have a growing vogue among a comfort-loving people in a rainy country like the Philippines. There is no taxicab business in the Philippines.

The tariff against foreign cars is: automobiles, 20 per cent; trucks, 15 per cent; parts (and accessories), 25 per cent, all on the ad valorem basis.

Foreign cars are few. It is not the tariff alone that makes this true. When a man can pay a high price for a car he does not mind a little extra by way of import duties. The fact is that the American car abundantly satisfies the public in the Philippines.

Automobile imports in 1922, latest year for which complete figures are available, were valued at \$699,463. Business for 1923 ran 60 per cent higher.

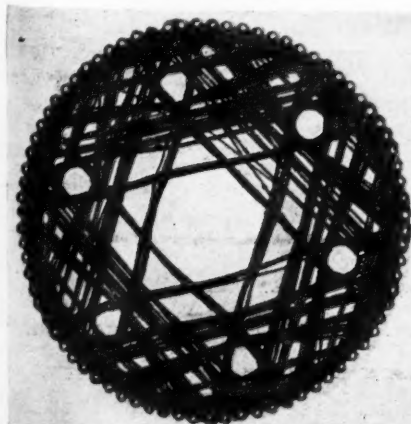
New Coupling Disks Have a Cord Foundation

FLEXIBLE coupling disks having a foundation of one or more units of cotton cord impregnated with rubber have been introduced by the Alpe Patent Coupling, Ltd., of Birmingham, England. The cord units are wound on frames with projecting studs to leave the bolt holes clear, and with a series of circumferential pegs to hold the turn-overs of the cord during the winding process. The cord, which has a tensile strength of 17 lb., is in one length throughout each unit.

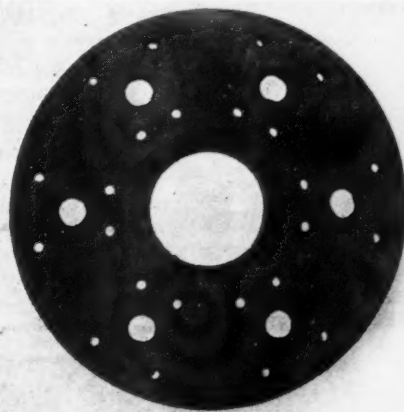
After the formed units have dried off they are completely encased in a rubber compound and vulcanized, pressure applied during this process filling up with rubber all the interstices of the cord windings. Precisely made jigs and molds are used, and a guarantee is given that the spacing of bolt holes and those for the driving plate rivets will not vary more than 0.005 in.

Each disk may consist of one or more cord units vulcanized together, and a special feature is the remarkable flexibility in every direction of the couplings so formed. Considerable latitude in shaft lengths and variations of shaft angularity up to 20 deg. are permissible without ill effect, it is claimed, and by varying the angle of the cord windings more or less elasticity can be provided, thus giving a shock-absorbing effect in the drive. The disks are waterproof and the rubber compound is said to be oil-resisting.

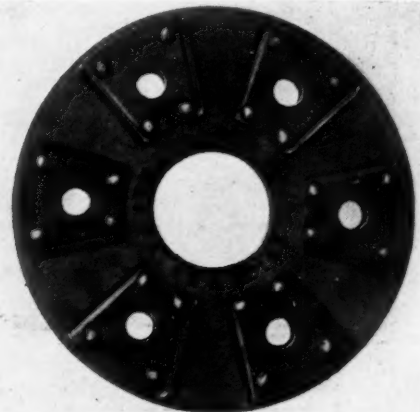
Disks of this make have been under test for twelve months past on passenger car and motorbus transmissions. In the case of a 6 by $\frac{3}{4}$ in. disk with six $\frac{1}{2}$ in. bolt holes the breaking stress between pairs of bolt holes was found by the Birmingham Corporation Laboratories to be 2800, 2604 and 2620 lb., respectively.



The cord foundation of the Alpe driving disk



Coupling disk after being vulcanized



Coupling disk complete with driving plates

Special Tools Aid Service Stations to Profit on Flat Rate

Wide discrepancies in type required for certain jobs often are due to differences in special equipment. Some automobile makers are urging dealers to improve their facilities in order to increase repair work returns. One 18 hr. job is now done in 4½ hr.

AN automobile manufacturer, ranked among the largest producers in the country, discovered recently that, in spite of the fact that his company had organized a flat rate system of repairs, his New York service station was taking 18 hours to do a certain job which was being done in the Detroit service station in 4½ hours, and which, experiments had shown, could be done in 1½ hours. The flat rate charge on the job is 10 hours.

Experiences such as these are convincing car manufacturers that service troubles have not ceased with the adoption of a flat rate system. They still have before them the problem of making the system generally effective and efficient. Investigation of such discrepancies as that cited show that they are caused primarily by, first, variations in equipment and second, differences in the knowledge of and ability displayed in use of the equipment. This is true in spite of the fact that, prior to adoption of the flat rate schedule, an elaborate system of time study was made by the factory. This condition is not peculiar to one manufacturer. It applies quite generally to nation-wide application of the flat rate system.

Tool equipment with which the dealer works not only must be standardized in order for the flat rate system to apply properly throughout the country, but it must be so designed that the skill of the individual mechanic

is no longer such an important factor in the time required for the job.

Tools should be as simple as possible and their installation must be followed up by careful instructions as to the purpose for which they are intended and the method of applying them to best advantage. Even an experienced mechanic cannot always see at a glance how a tool which is new to him is to be applied. For this reason he often is prone to put them aside and rely upon methods with which he has had sufficient experience to give him confidence. This may or may not result in good repair jobs, but it usually results in jobs which take considerably more time to perform than they should take. Often they are not so well done as jobs performed with tools designed particularly for the purpose.

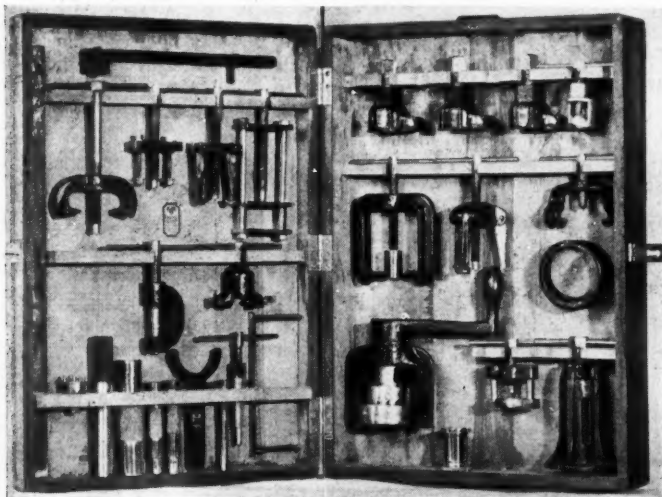
Well-Equipped Shop Aids Mechanics

Many automobile dealers are not thoroughly familiar with the construction of the car they sell and consequently are ignorant of the methods which should be followed in servicing it. Often such a dealer engages a man reputed to be a good mechanic and, if he proves fairly satisfactory in this line of work, the dealer accepts his judgment in all maintenance matters.

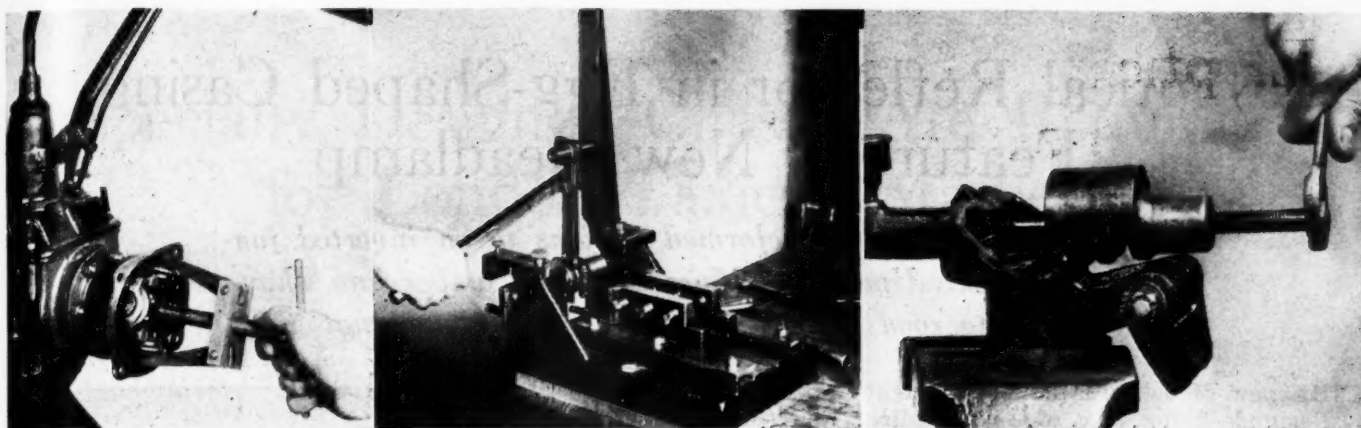
Sometimes factory recommendations as to tool equipment to meet the flat rate system are regarded as less reliable by this type of merchant than the opinion of his mechanic. If the factory has seen to it that the dealer has equipped his shop with the standardized tools recommended, often there are some tools in the list which the mechanic does not understand, or does not know how to operate. Such tools are bound to be shelved and the work which should be done by them will be done by slower and less efficient methods. Probably the merchant never will know whether or not his shop has been using the tools. If he does find it out he usually accepts the mechanic's condemnation of the tools as the final word in the matter.

One of the companies to recognize this state of affairs is the Chevrolet Motor Car Co. and it is taking steps at the present time to better situations such as those outlined above. In this connection it had authorized the publication of a book by the Kent-Moore Organization which has been designing, manufacturing and assembling various special tools and equipment necessary for the repair and maintenance of Chevrolet cars and trucks. The book is a catalog of these special tools, all of which have been tested and approved as to adaptability by the Chevrolet company and are suggested as the proper tools for all dealers and repair shops to use.

The quantity and variety of the special tools recom-



Jiffy tool cabinet which has been prepared by the Kent-Moore Organization with the sanction of the Chevrolet company for the repair and maintenance of Chevrolet cars. The cabinet makes it easy to check tools



How some of the special tools designed to expedite service work on Chevrolet cars are applied. The bending iron can be used as shown for straightening bent or twisted connecting rods, or for straightening fenders, lamp brackets, etc. Views of this kind, showing method of applying each tool, are reproduced on a chart intended to be placed on the wall in the service station for guidance of mechanics

mended depends upon the size of the business. The list of tools is marked A, B and C to correspond to various classes of dealers. The C list includes only those tools it is considered essential for every dealer to have, regardless of the size of his business. The B list includes the C list together with essential equipment that the average dealer should have, while the A list includes B and C lists, together with the more comprehensive equipment recommended for large dealers' shops. There are 37 items on the largest list. Only 10 of the 37 are recommended for the C type or small dealer and 27 for the average dealer.

The Chevrolet company does not stop at the sale of these special tools to a dealer, but follows up the sale to the extent of making certain that the dealer's repair department knows exactly how and when to use them. At the present time the Chevrolet company is conducting a school at the General Motors Building, Detroit. The purpose of the school is to teach the Chevrolet service policy and to give some idea of its completeness as regards the equipment furnished the dealers.

In this course it is intended also to bring home the fact that maximum efficiency can be attained only by using the tools provided for service purposes by the company and using them in the way they should be used. After Chevrolet road men have taken the course, the school will be thrown open to service men in the territory. Similar service schools are to be opened at all of the assembly stations of the Chevrolet company. By this means it is hoped to impress on the minds of the service organization in the field the necessity for standardizing on equipment and methods along lines suggested by the factory.

Tools Increase Profits

The problems of a manufacturer of cars in the higher price classes are not so acute as those making lower price, big production units. Distribution is less intensive and the average dealer is more thoroughly informed on the various angles of the business. In general he does not have to rely on the word of a mechanic as he, himself, has sufficient experience, as a rule, to know that, in the proper operation of a flat rate system, every job should pay a profit unless exceptional conditions apply. If the factory insists upon the use of the flat rate system an intelligent dealer soon comes to the factory with his problems on any particular job which shows a consistent loss. This situation automatically forces the dealer to use the tool equipment best for the servicing of the particular car.

Recently the Packard company, whose flat rate system covers both labor and material, organized a contest among its dealers for the invention of special tools intended to shorten time required on certain jobs. Some tools which figured in this contest have become standard and the times established during the contest have been made the service time on the flat rate system. As has been told in these columns, the Packard company also maintains a service engineering staff which has done much to eliminate such discrepancies in time for doing various jobs as were mentioned at the beginning of this article.

Detailed Chart Provided

In order to illustrate the method which now is being put in use by the Chevrolet company, its dealers are being provided with a chart on which there is an illustration of the cabinet and of each tool in actual use. Every tool in the cabinet is illustrated also in the booklet prepared by the Kent-Moore Organization. The caption under each illustration tells the purpose of the tool and how to use it, and this is followed up by recommendations from the factory which dwell on the importance of utilizing the tools if the flat rate schedule is to be met profitably. A photograph of the cabinet and tools is reproduced in the accompanying cut as are also photographs showing some of the tools in use.

The combination of insisting upon meeting the flat rate schedule and the provision of tool and equipment to perform the work, even with the aid of mechanics who are not in any sense possessed of extraordinary ability, is rapidly helping to solve the service problem.

AS an example of what can be done by means of a thorough analysis, G. V. S. Carroll of the Dennison Mfg. Co. told the Taylor Society that in making an analysis of the market in the city of Pittsburgh, by trades, his firm found that there were some 80,000 good prospects, whereas they had only 2000 customers there. An analysis of the distribution of salesmen's time showed that only 15 per cent was spent in selling, 40 per cent in travel, 20 per cent in interviewing and 25 per cent in miscellaneous duties. Salesmen's work was made more productive by better routing and by more careful direction of their activities. The number of calls per day per man was increased from 7-10 to 15-25, and as a result both the number and the volume of orders was materially increased. The concern never stops advertising altogether, but it advertises more in dull than in good times.

Elliptical Reflector in Egg-Shaped Casing Feature of New Headlamp

Beam of white light is deformed by lens to an inverted fan-shaped section. Upwardly diffused light, of amber hue, shows objects in the road above the lamp level but does not glare.

THE new Model 20 headlight brought out by the Edmunds & Jones Co. of Detroit, Mich., represents the result of several years of experimental work on the part of a firm which has specialized in lamp manufacturing for the past 20 years.

In developing a headlamp to meet the conditions of road driving, a number of deviations from previous practice in headlight design were made. Probably the most radical departure is the adoption of a reflector of elliptical section, forming almost a complete ellipsoid, instead of the usual parabolic reflector with a very wide opening and which catches only a small portion of the luminous rays emitted by the bulb. The reflector used in this lamp has an opening only 4 in. in diameter and is inclosed in an egg-shaped casing. The lens is of the clear glass condensing type, and it is claimed that the small size of the opening permits of effectively redirecting a large proportion of the light, so that a forwardly projected beam of high intensity is obtained.

Within the reflector, about midway between the bulb and the lens, is located a color filter or colored glass disk which permits only amber-colored rays to pass. This color filter is so located that the focus of the lens lies in its plane. It is substantially semi-circular in form and covers the lower half of the cross-section of the reflector at its minor axis, but less than one-half of the rays radiated from the bulb strike the filter directly or after reflection because of a V-shaped notch in the upper edge of the filter at the middle thereof.

Most of the rays from the source which strike the lower part of the reflector, and which are reflected in an upward direction, fall upon the light filter and are converted into a beam of amber color. Such a beam not only is non-offensive to oncoming drivers, but has the additional advantage that it penetrates fog better than a beam of white light. The greater part of the radiation is concentrated in the beam of white light thrown straight ahead and downward.

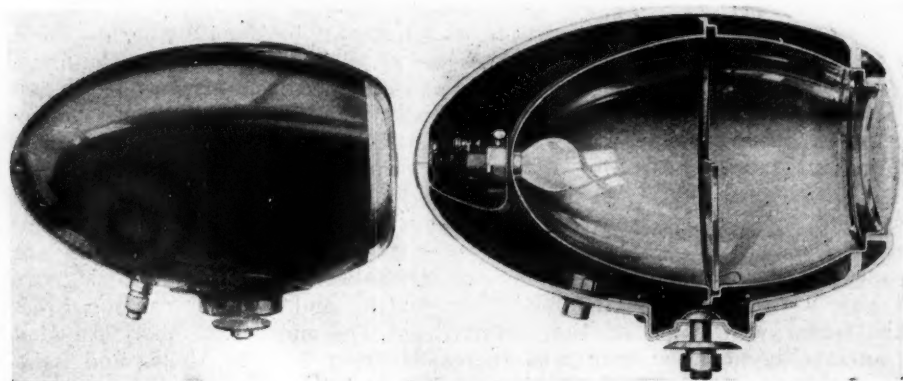


Photograph of beam from E. & J. light thrown on garage door, showing particularly the "cut-off" line

A focusing device is provided, of such design as to make adjustment of the filament position easy. The glare-preventing coloring of the upper portion of the beam does not depend upon the adjustment, hence it is impossible to cause glare through incorrect adjustment. It is also claimed by the manufacturer that the difference in color between the upper and the lower portion of the beam emphasizes the cut-off, that is, the upper edge of the intense portion of the beam, thus making it easier to properly aim the lamp. It is claimed that the illumination from this headlamp conforms to the standard set up by the Illuminating Engineering Society and the Society of Automotive Engineers, which standard has been written into the laws of ten Eastern States.

Accessibility has been a major object in the design of the lamp. The latter has a 4-in. "double strength" lens and is finished in black enamel, with nickel-plated lens rings. The condensing lens is formed with inclined flutes, the inclination conforming to the angle of the sides of the V slot in the light filter.

A 21-candle-power gas-filled bulb forms the source of light for the lamp. The light emitted by the bulb is reflected in such a way that only that portion of the rays in the beam above the section of maximum intensity pass through the light filter. Thus the beam is divided into two sections, a lower section white in color and very intense, which illuminates the road ahead to a distance of 500 ft., as well as the road sides and ditches, and an upper section of an amber hue.



New Edmunds & Jones Model 20 headlight with elliptical reflector and amber color filter

Section through E. & J. Model 20 headlight showing mounting of color filter, reflector, focussing screws, lens and general construction

Specially Designed Chassis Are Required for London Taxicab Market

Detailed restrictions imposed by Metropolitan officials do not apply in provincial towns. Annual inspection is only demand in latter areas. Few cab-operating companies in Great Britain.

By M. W. Bourdon

SPECIALLY designed chassis are necessary for taxicab use in London because of the very specific restrictions imposed by municipal authorities, but these same limitations do not apply to provincial towns in other parts of the country.

Licensing authorities in the small towns have few requirements, except that each vehicle be presented annually for inspection to demonstrate the efficiency of its brakes, the quietness of its engine and running gear, and the condition of its paintwork and upholstery.

Any taxicab which meets the London requirements, therefore, is practically certain to be acceptable throughout the rest of England. A manufacturer might find it worth while to prepare a special design to comply with London regulations, since it would have a market in the smaller towns as well.

There are very few cab-operating companies in England, the vast majority of the vehicles in use being owned by their drivers, who usually acquire them on a deferred payment system, even when purchased second hand. This applies equally to London as to the provinces, and the few cab-operating companies that exist are the exception. Originally the London taxicabs all were owned by two or three big companies, but the difficulties experienced with drivers led to the latter being given opportunities of taking over the earlier cabs and running them themselves.

Since any taxicab will be licensed by a British provincial authority which is accepted by the Metropolitan officials, it is of interest to set down a few of the salient regulations of the London police. A revised edition of these has recently been issued.

Designs Should Be Inspected

A most important point for the manufacturer who is planning to offer cabs for London use is in a note which advises that the makers of any new type of cab would do well, as a preliminary, to send the drawings to the police headquarters for consideration as to the general suitability and fitness of the design for public service in London; especially so where any vehicle differs essentially in its method of propulsion or design layout from those now in use.

The first of the actual regulations states that each new type of cab intended for licensing must be presented to the police headquarters for inspection, though subsequent vehicles of the same type will be licensed by local stations if accompanied by a certificate from the maker stating that they are in every respect similar to the one already approved.

Among the regulations concerning design details are the following:

1. Road clearance must be at least 10 in., with allowance for tire wear and spring deflection.

2. Rear springs must be at least 40 in. apart and front ones not less than 26 in.

3. The track must be not less than 52 in. and must be the same back and front within 2½ per cent.

4. Pneumatic tires are essential with a minimum diameter of 810 mm.

5. Overall length of the vehicle must not exceed 166 in. and the width 69 in.

Two Independent Sets of Brakes Needed

Two sets of brakes absolutely independent of one another must be provided, with a compensating device in the linkage of any that apply to the rear wheel drums. Four-wheel braking is not yet authorized, and in any case will be considered only when there are separate sets of shoes applied by lever and pedal. For example, where the brakes consist of nothing except single pairs of shoes on four wheels, they would not be acceptable; they would have to be accompanied by a separate transmission brake or by second pairs of shoes in the rear wheel drums.

The reason a taxicab chassis for London use generally must be of special design is found in the regulation concerning steering lock, for no vehicle will be licensed unless it is capable of turning round in one lock within a circle of 25 ft. diameter. Incidentally, in connection with the steering, it may be mentioned that no ball and socket joints of steering connections must be pendent. Where such joints are used the rods must be carried upon and above the ball.

The regulation as to maximum speed is probably one concerning which the authorities are least insistent, for it specifies that no cab shall be so geared that its highest speed shall be in excess of 20 miles an hour; in other words, in excess of the statutory legal limit for cars in Great Britain. Gear ratios and normal engine speeds must be stated by the applicant for a license, and when a license has been given no alteration shall be made in the gear ratios or in any other structural detail.

Carbureters and other fuel containers must not be near ignition apparatus, wires carrying electric current or the engine exhaust system. Fuel tanks must not be placed either on the dash or at the rear, which obviously infers that they must be under the driving seat and that a gravity feed is insisted upon.

The body work must be of a landaulet or limousine pattern. Numerous minimum dimensions are included in the regulations relating to the interior height, the size of the seats and the width of knee-space. Electric lighting is not insisted upon. Very few London taxicabs have other than kerosene lamps, which the owner-drivers appear to prefer.

England's Largest Car Manufacturer Introduces One-Ton Truck

First British product in this class is expected to cut into practical monopoly of Ford. Power unit is same as that used in passenger chassis, but other parts are designed especially for service required. 3 x 4 in. engine and 122 in. wheelbase.

MORRIS MOTORS, LTD., Coventry and Cowley, England, whose output of passenger cars reached within a few score of 20,000 last year, bought in December as a going concern the plant of E. G. Wrigley & Co. components manufacturers, Birmingham, and have put into production there a one-ton truck chassis. The power unit is practically the same as that of the 14-hp. Morris car, the engine of which develops approximately 23 b.hp. at 2000 r.p.m. and 30 b.hp. at 3000. This unit is made at the Coventry plant, which has an output that will be worked up to 1000 per week before the end of March from the present figure of 600.

The unit has been operating experimentally in trucks for some twelve months past and, having proved suitable, has been adopted for the one-tonner. The four-cylinder engine has a bore and stroke of approximately 3 by 4 in., cylinder block integral with upper crankcase, three-bearing crankshaft, detachable L-head, aluminum sump and thermo syphon water circulation. A magneto is driven off a cross-shaft from the helical front end steel and bronze gears.

Cast-iron pistons and steel rods of H-section are used. These parts only deviate from the car engine, which has aluminum pistons and duralumin connecting rods.

Third Ring Prevents Cylinder Scoring

Supplementing the two compression rings just below the crown is a third ring in line with the piston pin, where it performs the usual function of a scraper ring with a beveled slot, and also forms an additional safeguard against scored cylinder walls caused by piston pin. The pin is normally located by a pinch-bolt in the connecting rod.

A spring loaded plunger pump, the suction port of which is submerged, delivers the oil to the three main bearings of the crankshaft. Overflow from the latter is depended upon to maintain the level in the stamped steel troughs under the big ends. Bypass pipes lead to the front end gears and to a gage. The gear casing is in direct communication with the valve stem chamber and a full length trough in the latter is kept full of oil for lubricating tappets and valve stem.

Mushroom cam followers have bearings in the cast iron block. The camshaft also runs in the cast-iron unit and has means for taking up axial play arising from the end thrust of the helical gear drive.

A bellhousing incloses the flywheel and two-plate clutch. There are two rows of cork inserts in the steel driven plates which run in oil. A sleeve extension of the rear-most driving plate carries a sprocket for a silent chain drive to the generator. The latter has a tunnel housing beside the gearset, but is flange fixed with means for

chain adjustment. A dynamometer is an optional extra, but electric lighting with a three-lamp set is included.

Three speeds and reverse are afforded by the gearset, with central lever control. The main shaft runs in ball bearings and bronze bushings are used for the layshaft, pilot bearing and reverse shaft, while the gears are of case hardened chrome nickel steel.

Power Unit Only Is Same as in Passenger Car

Apart from the power unit, the one-ton chassis differs in every respect from the passenger car. Front and back axles, brakes, frame, steering, wheels, etc., are specially designed; in fact, it can be said that at no point where the torque, load and braking stresses are heavier is a car component utilized. The radiator is also of different design and larger, with aluminum tanks and sides.

Final drive is by an inclosed propeller shaft to overhead worm gearing with optional ratios of $5\frac{1}{2}$ and 7 to 1. The differential casing runs on ball bearings. Cast steel centers with weldless tube extensions of $3\frac{1}{2}$ in. diameter drawn to $2\frac{3}{8}$ in. at the ends for double-row ball bearings, and drive shafts $1\frac{5}{8}$ -in. diameter splined for the differential and hubs, constitute a three-quarter floating rear axle.

Rear wheel drums are 15 in. in diameter and contain expanding shoes side by side, each with fabric facings $1\frac{1}{2}$ in. wide.

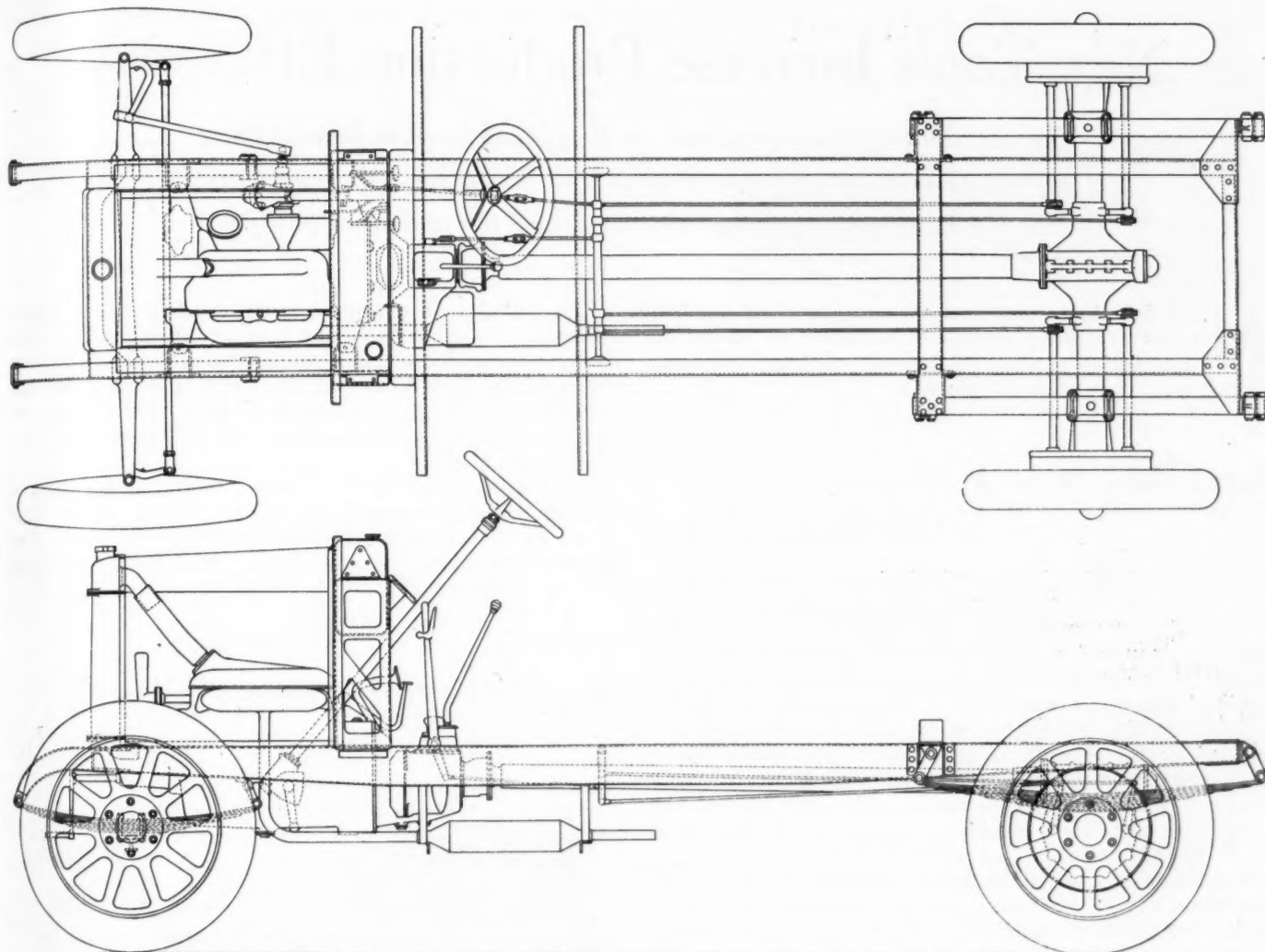
Either pressed steel hollow spoked or disk wheels are fitted. In either event they are detachable and are fitted with 32-by- $4\frac{1}{8}$ -in. straight-side cord tires. The springs are half-elliptic front and rear. They measure respectively 2 in. and $2\frac{1}{4}$ in. wide and are almost flat when normally loaded.

The frame is formed of two pressed steel side members, straight in plan, and three cross members. One of the latter is at the front end and the others at the rear in line with the ends of the springs. Pressed steel extensions of these rear members form brackets for the spring shackles, but have small stampings riveted on for the shackle bushings.

Details of Frame Construction

Gussets at the rear corners are integral with the cross member extensions, while the four-point suspension of the power unit serves to brace the frame under the dash. Side rails taper slightly in elevation at the front and rear ends, but for the greater portion of their length they are $5\frac{1}{2}$ in. deep. Their width is 2 in. and they are made from 3/16-in. stock.

A dash of pressed steel, with latticed side members, supports the fuel tank and a projecting instrument board, which is also a pressing. The ignition and throttle levers project from the dash, hence the steering column is clear



Plan and side elevation of new Morris one-ton truck which is the first speed truck of this size to be placed on the market by a British manufacturer

of levers both above and below its 17-in. diameter wheel.

An H-section front axle with forked ends for the knuckles and ball bearings for the wheels are used in conjunction with a worm and worm wheel steering gear. The housing of the latter is bolted to the side of the crankcase, while a bracket projecting from the engine bearer arm serves to steady the column. The axle has a caster angle of three degrees. King pins are not inclined transversely. They are fixed in the forked ends of the axle and have bronze bushings and ball thrust bearings.

First Truck of Its Kind Built in England

This new Morris production is the first thing of its kind to be produced by a British firm. No previous attempt has been made to enter the field in which the Ford one-tonner is used so extensively. While it is highly improbable that on a price basis alone it will compete with the Ford, the Morris officials have reason to believe that, in view of its specification, high-grade finish and efficiency, it will put them in a favorable position to challenge with success what has hitherto amounted to a practical monopoly in Great Britain in the one-ton truck field.

The following are some dimensions of this chassis:

Wheelbase, 122 in.

Track, 54 in.

Dash to end of frame, 112 in.

Dash to rear axle center, 96 in.

Height of frame from ground, 26½ in.

Minimum road clearance, 14 in. at front, 10½ in. at rear.
Weight of chassis approximately 2000 lb.

Fluid for Hydraulic Brakes

IN our issue of Dec. 20 the statement was made in connection with a description of the Moon car that the fluid used in the Lockheed hydraulic brake "consists of equal parts of glycerine, alcohol and castor oil, but ordinary lubricating oil can be used in an emergency."

The Hydraulic Brake Co. states, however, that on account of the fact that rubber hose is used in some of the connections in their braking system, and that mineral oil causes rapid deterioration of rubber hose, they are averse to the use of mineral oil for the purpose in question. Furthermore, glycerine is not recommended as one component of the fluid.

A mixture of denatured alcohol and castor oil, purchased to rather rigorous specifications, is recommended.

BY means of a new process, which is being developed in Berlin, metallic chromium is deposited electrolytically in a form suitable for polishing. The coating has a distinctive platinum-like appearance and exceptional hardness, enabling considerably thinner coatings to take the place of thicker nickel plating. Wherever great resistances to heat is called for, its use is clearly indicated. It is unaffected by the atmosphere and is not attacked by alkalies and most of the acids and salts.

New Tools Increase Production Efficiency

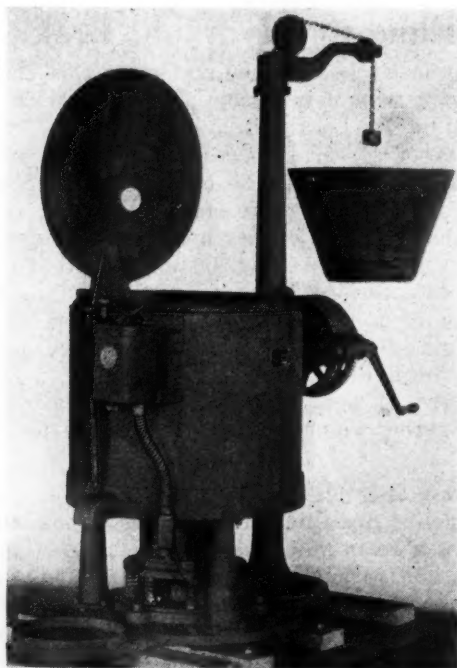
Recent developments include a line of geared-in-head lathes, self-contained, electrically-driven oil extractor, a pneumatic riveting hammer, and a machine designed for polishing bumpers.

MACHINE tools and factory equipment of various kinds are being designed constantly as an aid to automotive production. Here are described some of the more recent developments.

New Machine Extracts Oil from Chips

THE Curtis Machine Co. of Worcester, Mass., is placing on the market a new self-contained, electrically-driven oil extractor in which the armature of the electric motor is mounted directly upon the spindle of the machine. This extractor is regularly equipped with a 3-hp. squirrel cage type three-phase alternating current motor wound for 220, 440 or 550 volts, and running normally at 1200 r.p.m. The drum type controller is mounted on the drum of the machine and in addition to the running position has a braking position. It is claimed that the machine under full load can be brought up to full speed in 10 seconds and to a stop in 12 seconds.

Emphasis is laid by the manufacturers on the smooth operation of the machine. Special attention was given to the problems of bearing application and lubrication, and it is claimed to be impossible for lubricant and other foreign matter to get into the motor. Taper roller bearings are fitted at the upper end of the spindle and on the hoist arm, while the weight of the whole assembly, including the motor, is carried by a pivot bearing in the base.

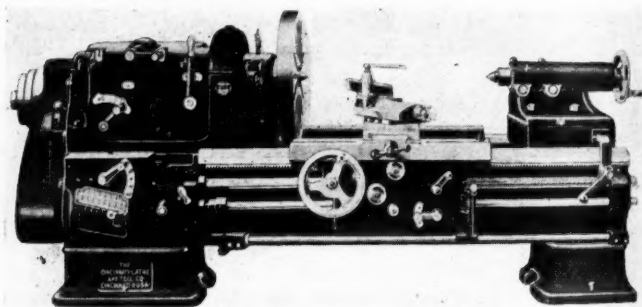


Curtis No. 500 electrically driven oil extractor

The machine is equipped with a safety cover which automatically locks the drum control when raised. This device prevents operation of the machine except when the cover is closed, and at the same time prevents the splashing of oil. The machine weighs 1400 lb. and requires 54 by 30 in. floor space. Its chip pan has a capacity of 2 bushels.

It is announced by the Curtis Machine Co. that a similar motor drive will be applied to the other sizes of oil extractor regularly manufactured by it and that the new line of centrifugal driers which it is developing will be similarly driven.

Rigidity and Accessibility Are Features of New Lathe



Cincinnati 30-inch geared head lathe

A NEW line of geared head lathes has been placed on the market by the Cincinnati Lathe & Tool Co., Cincinnati, Ohio. The machines are of very rigid construction, as may be judged from the illustration herewith, and are claimed to be capable of withstanding the heaviest and most rapid cuts with the best high speed lathe tools.

One of the features of the design is that the inside of the headstock can be inspected through an opening in the cover without the necessity of removing the entire cover from the head. Twelve different speeds are secured with only thirteen gears, and the time required is only 12 sec. All of the gearing is contained in an oil housing and not more than one pair of gears are in mesh for any one speed. Owing to the low pitch line velocity of the gears these heads are said to operate particularly quietly. The shifting levers are so located that there is ample clearance and consequently no danger of cramping or pinching the hands.

A splash system of lubrication is used, and is so arranged that all of the bearings are liberally oiled even at low speed. An indicator shows the amount of oil in the base of the head, and in the settling basin there is a drain for removing stale oil.

The bronze headstock bearings can be adjusted without removing the cover. A plunger in front of the head locks

the face gear when a frozen chuck or face plate has to be removed.

Two methods of motor mounting have been worked out. By one the motor is secured to the rear of the cabinet leg close to the floor, while by the other it is placed on top of the headstock. Both mountings make the lathe and motor combination self-contained so that it can readily be moved from one part of the shop to another.

The clutch is an integral part of the head, and the pulley on it is so arranged that the center line of belt pull does not overhang the bearings. There is an oil reservoir between the two brass bushings, which keeps the pulley well oiled when running idle. There is a neutral position for the clutch, for which the spindle is free, which is convenient in chucking parts of irregular shape.

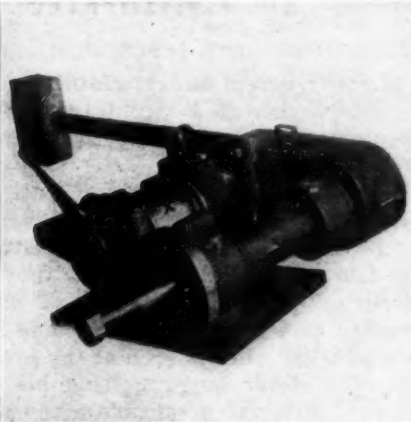
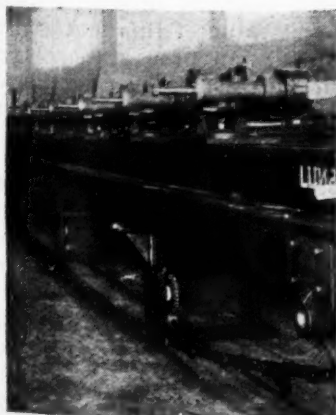
These lathes are made in sizes of from 16 to 30 in., inclusive. They are furnished as single pulley belt drive lathes which can be converted to motor-drive models by simply replacing the pulley by a chain wheel and silent chain.

New Machine Designed for Polishing Bumpers

THE accompanying photographs show a new machine for polishing bumpers at a rapid rate. The machine, known as the Lund, is in use by the Wolverine Bumper and Specialty Co., and completely polishes a bumper in 30 sec. There are six polishing heads, the wheels of which are covered with abrasive material of different grain, from very coarse to very fine. Bumpers enter the machine in the rough and come out with a highly lustrous and even polish. One of the views shows the polishing head in detail. At the right is seen the belt pulley (X) and adjacent to it a belt-tensioning device. From the pulley shaft the power is transmitted to the polishing wheel arbor through an inclosed chain at the rear.

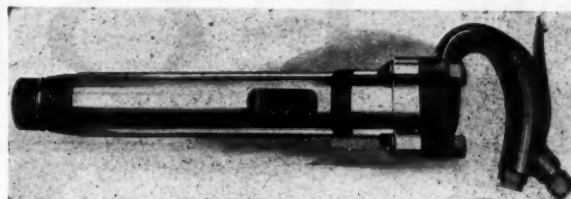
Another view shows the driving gear for the feed chain by which the bumpers are carried through the machine. This gear is completely inclosed so as to protect it from grit and abrasive material. In the photograph the covers of the housings are removed so as to show the gears. Inclosing the driving gears also serves to protect the workmen. It will be noticed that the feed chain is provided with driving lugs which carry the bumpers along positively. The saving which can be effected by the use of such a machine, as compared with hand polishing, is apparent.

The Wolverine Bumper and Specialty Co. is located in Grand Rapids, Mich.



Assembly and detail views of Lund bumper polishing machine

New Riveting Hammer Has a Combination Valve



New Ingersoll-Rand riveting hammer

A NEW type of pneumatic riveting hammer has been developed by the Ingersoll-Rand Co. of New York. Among its features are the bolting of the handle to the barrel, a heavy section valve with liberal bearing surfaces and a combination poppet and piston type throttle valve. It is claimed for these hammers that they possess ample power, are economical in air consumption and are easy to operate.

The new hammers are made in three styles and in a considerable range of piston strokes. The standard or A-type has a barrel to accommodate a rivet set clip only. Three alloy steel bolts with lock washers hold the handle to the barrel, a feature which permits of taking the hammer apart for cleaning, etc., without the use of tools other than a wrench. The throttle valve is claimed to combine the nicety of control of a piston valve with the non-leak feature of a poppet valve. The throttle lever or trigger is made from one piece of spring steel and has a long bearing in the handle. It gives sensitive control, permitting a varying the hammer action.

The valve itself is a sleeve of alloy steel without holes or parts and operates in a valve box in the head of the barrel. The end of the valve box is solid and a compression chamber is formed within the head which cushions the piston on its return stroke and prevents it from striking the handle.

Handles are drop forged, of a shape to fit the hand, and are sand-blasted to give a good grip. Either outside or inside trigger handles can be furnished, the outside type being standard. The air is exhausted from the side of the barrel near the handle and the exhaust can be turned in any direction desired by means of a deflector. The piston diameter of all hammers is 1 1/16 in., while the strokes range from 5 to 9 in.

A 1-in. micrometer with decimal equivalents in raised figures on the frame has been brought out by the Reed Small Tool Works of Worcester, Mass.



The FORUM



High Prices for Spare Parts are Resented by Hollanders

Editor, AUTOMOTIVE INDUSTRIES:

I BELIEVE that our country is one of the best buyers of American cars and motorcycles, and for this reason I don't doubt that your manufacturers will be interested in some facts which have an exceedingly bad influence on their selling possibilities in Holland. Not only are prices of cars and motorcycles higher than necessary in many cases, but the prices charged for spare parts and replacements are generally quite out of proportion with their value.

There is only one manufacturer who is fixing his own prices in Holland, and I need not tell you that this man is Henry Ford. If the other manufacturers followed this policy they would doubtless increase their foreign output 20 per cent and more. There is not a single day in the year that I do not receive letters from our readers stating that they had to pay So-and-So many dollars for a single valve or valve spring and, moreover, that they had to wait several weeks or months before getting it at all.

If manufacturers compelled their foreign representatives to have a full stock of spare parts and to sell these at reasonable prices they would only deal in their own interest, and they would not lose customers who don't like to pay exorbitant prices.

I shall be glad to get in touch with every American manufacturer who thinks that I am right, and I will gladly publish free of charge the original prices of motorcycles, cars and some of their spare parts to help them and my readers in giving and getting value for their money.

H. ZOETLIEF HORMAN,
Editor *De Motorkampioen*,
Oosterbeek, Holland.

Concerted Effort Needed to Eliminate Truck Evils

Editor, AUTOMOTIVE INDUSTRIES:

PLEASE accept our congratulations on your most excellent article in a recent issue of AUTOMOTIVE INDUSTRIES entitled "Keen Competition Chiefly Responsible for Truck Industry Ills."

There is certainly a world of truth in what you say, and just why so many of the truck executives are seemingly indifferent to a cure for the situation is beyond reason. The fact remains that most of the sales departments go merrily on, trading their heads off on the old trucks, with resultant disaster from a profit and loss standpoint. The state of truck sales is such at the present time that it is a case of a clever buyer getting his own terms and conditions instead of a sensible manufacturer being able to sell his product on a basis of a fair and reasonable profit.

Regardless of the manner in which Mr. Corbitt's sug-

gestion regarding "trading allowances" was received, some day, and that right soon, truck manufacturers will have to wake up to the situation and either remedy it in a concerted way or go out of business.

The writer believes that a constant hammering of thoughts similar to those given in your excellent article will bring results from a leading journal such as AUTOMOTIVE INDUSTRIES.

You, no doubt, appreciate that it is very difficult for any sensible-minded truck manufacturer today to sell his product on a sound business basis in competition with the other "very hungry for business" manufacturers who are willing to sell on a basis of little or nothing down in cash, a tremendously inflated trade-in allowance, and twenty-four months in which to pay the balance. Some day sound business principles will have to be applied in the truck industry, and besides doing our own part we all want to help bring the other fellows into line.

The manufacture and sale of motor trucks is a sound economic necessity which eventually must succeed on a profitable basis, but a lot of evil practices will have to be eliminated first.

A. S. MORE, President,
Selden Truck Corp.

Design and Haulage New Book Topics

A BOOK dealing with the fundamentals of automobile design in a rather mathematical way has been issued recently by M. Krayn of Berlin, the author being Prof. W. Ghittis of Petrograd. The author proceeds from the premise that the motor car constitutes a complete, undivided system and can be properly analyzed only when looked at from that point of view. An analysis of the factors affecting the propulsive force and the resistance encountered by the vehicle when in motion, as well as the phenomena accompanying traction and propulsion, forms the basis of the work.

In addition to the theoretical mathematical deductions the book contains considerable tabular matter representing the results of experiments made by investigators in all parts of the world, but the value of this material is in many cases lowered by omission of a statement of the conditions under which the results were obtained. The title of the book is *Grundlagen des Automobilbaues* and it is printed in German.

"ECONOMICS of Motor Transportation" by George W. Grupp is a summary of the principles of motor haulage developed from a careful study of many individual cases and a consideration of the basic factors involved in this relatively new business.

The volume discusses very specifically and in detail such problems as when to replace horses with motor equipment, selection of equipment, organization of personnel, truck operation, loading and unloading, routing, maintenance and inspection, cost keeping and bus transportation. D. Appleton & Co. are the publishers.

Battery Exports and Car Imports Increase

Storage battery exports from the United States in 1923 increased about 35 per cent in number and about 43 per cent in value. The number of automobile engines shipped abroad decreased about 4000, but the value showed a gain of about \$210,000.

Nearly twice as many foreign cars were imported into the United States last year as in 1922, but their unit value was much smaller.

These are the outstanding features of the detailed export and import data presented herewith.

American Exports of Storage Batteries

		1922		1923*				1922		1923*	
Countries		No.	Value	No.	Value	Countries		No.	Value	No.	Value
EUROPE						NORTH AND SOUTH AMERICA					
Austria	.....			100	\$1,150	British Honduras	.....	10	208	83	1,262
Belgium	.....	1,456	\$30,050	3,374	40,798	Canada	.....	16,921	164,623	15,810	211,955
Czechoslovakia	.....	200	1,853			Costa Rica	.....	32	1,064	124	3,203
Denmark	.....	9,502	68,856	8,363	110,160	Guatemala	.....	176	3,328	205	4,488
Estonia	.....			4	135	Honduras	.....	159	5,798	135	2,007
Finland	.....	9	125	42	709	Nicaragua	.....	98	1,630	222	3,445
France	.....	10,094	78,336	6,617	57,418	Panama	.....	648	13,811	840	21,491
Germany	.....			320	8,420	Salvador	.....	136	3,323	489	7,869
Gibraltar	.....	2	100			Mexico	.....	3,870	62,727	4,938	105,248
Greece	.....	10	256	86	1,244	Miquelon, Langley and	.....			
Iceland and Faroe Is.	.....	10	340	25	144	St. Pierre	.....	1	275		
Italy	.....	123	1,117	298	2,406	Newfoundland	.....	410	2,418	262	4,246
Latvia	.....			40	153	Barbados	.....	31	489	106	1,335
Malta, Gozo and Cyprus	.....	19	352	16	264	Jamaica	.....	842	8,035	511	7,860
Netherlands	.....	339	8,461	1,999	43,922	Trinidad and Tobago	.....	230	4,549	311	4,893
Norway	.....	990	22,598	1,404	23,334	Other British West Indies	.....	217	8,670	195	2,991
Poland and Danzig	.....	20	900			Cuba	.....	3,682	49,234	5,414	98,554
Portugal	.....	61	595	141	1,706	Dominican Republic	.....	613	5,784	181	1,991
Rumania	.....	6	177	1	25	Dutch West Indies	.....	8	163	20	378
Russia	.....			20	382	French West Indies	.....	29	450	25	295
Spain	.....	3,200	37,826	5,160	73,393	Haiti	.....	174	3,753	157	2,776
Sweden	.....	580	10,290	1,337	22,431	Virgin Islands	.....	28	585	16	436
Switzerland	.....	26	334	122	1,858	Argentina	.....	12,377	116,886	23,430	234,546
Turkey in Europe	.....	42	1,197			Bolivia	.....	8	501	31	503
England	.....	8,596	143,259	12,503	198,427	Brazil	.....	3,998	56,063	6,832	90,907
Scotland	.....			45	525	Chile	.....	564	17,481	1,093	32,242
Ireland	.....			350	2,627	Colombia	.....	788	8,534	309	6,447
						Ecuador	.....	52	1,015	184	3,341
						British Guiana	.....	215	2,120	109	1,397
						Dutch Guiana	.....	28	757	19	68
						Peru	.....	285	10,701	1,105	16,713
						Uruguay	.....	756	17,463	2,328	22,840
						Venezuela	.....	137	2,491	253	4,195
						ASIA					
						Aden	.....	4	67	6	95
						Armenia and Kurdistan	.....	8	561		
						Ceylon	.....	350	7,068	245	4,453
						China	.....	1,819	22,855	1,703	34,119
						Chosen	.....	40	658	10	127
						British India	.....	4,228	68,662	5,266	50,806
						Straits Settlements	.....	376	9,711	1,023	17,576
						Java and Madura	.....	1,122	21,154	1,261	20,377
						Other Dutch East Indies	.....	43	897	48	932
						Far Eastern Republic	.....	28	198	3	27
						Hejaz, Arabia and Iraq	.....	1	50	25	300
						Hongkong	.....	173	3,536	177	3,409
						Japan	.....	1,154	28,274	1,137	26,155
						Kwantung	.....	3	20	55	859
						Palestine and Syria	.....	93	2,772	87	1,856
						Persia	.....			2	75
						Philippine Islands	1,488	44,073	1,736	33,953
						Siam	126	2,763	57	1,623
						Other Asia	1	30		

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Railroads and "Highway Subsidies"

NOW that an entente cordiale has been established between the railroads and the automotive industry it may not be diplomatic to refer to some of the ancient propaganda of the carriers which was rampant a year or so ago, but we recall that one of the favorite themes was that the building of good roads was a subsidy for motor vehicles. That "subsidized highway" talk has not been forgotten and it is somewhat refreshing to note that the Departments of Agriculture and the Interior have asked Congress to determine whether or not the Northern Pacific Railroad is entitled to 3,000,000 acres of land in Montana, Idaho and Washington granted it in subsidies in 1864 and 1870 as a reward for building the road. It is the contention of the Government that the original cost of the railroad did not exceed \$70,000,000 and that its gross receipts up to June 30, 1917, from the sale of other land given it in the form of subsidies amounted to \$136,118,533. That would be about twice the entire cost of the road and if the company

retains title to the additional acreage now in dispute the proceeds of the sale would be additional "velvet." "People who live in glass houses shouldn't throw stones."

The baselessness of assertions that the Federal Government is subsidizing motor vehicles by its appropriations for highway construction is shown by the fact that its total expenditures for good roads from the beginning of 1917 to the end of 1923 aggregated only \$265,000,000, including administrative expenses, which was only 45 per cent of the total of \$589,000,000 paid by motor vehicles buyers and operators in those years in the form of Federal excise taxes.

Federal aid to individual States in road building is on a 50-50 basis and the fees collected from motorists have much more than made up the amount spent by States in constructing highways for the Federal system. It is evident, therefore, that the motorist is paying for the roads he uses and that he is not being granted anything remotely resembling a subsidy.

Foreign Tire Competition Keen

AMERICAN tire manufacturers have been putting up a brave fight in the export market for several years. Price cutting, which has made profitable business difficult in the domestic field, has been an even more vital factor in overseas territories. The battle for business has been chiefly between a single prominent European maker and the big American companies. It has been practically impossible for small American producers to stay in the export field under the keen competitive conditions which have existed.

Price has been the one big selling argument in the world tire market for some time past. In order to increase the volume of foreign sales last year American manufacturers had to cut prices very materially. Although their export business went up considerably in number of units, it decreased slightly in dollar value.

The report confirmed last week that Michelin has increased prices about 20 per cent in several European countries is the most encouraging received in some time. It indicates that American manufacturers have held their foreign markets to some purpose and that there may be future sales in store which can be made at a reasonable profit.

Pity the Poor Service Man

MANY persons who are theoretically or even actually interested in bettering service conditions in the automotive industry often appear to forget that one of the fundamental needs is a reduction in the number and variety of parts which the service station must carry in stock.

When a new design is demanded by sales or other considerations, every effort should be made to utilize the parts used in older models so far as this can be

done without serious detriment to the design or performance. This saves not only much cost in tooling at the factory but helps to minimize stocks in thousands of service stations throughout the country.

A change here and a change there may seem insignificant at the time they are made, but in the aggregate they spell grief to the service station. It is well to consider the effect of a change upon the parts situation and consult service men in various localities before a decision is reached.

This applies not alone to chassis but to body parts which often require replacement, such, for example, as front and rear fenders. Often as much as one-third of a parts room is taken up by fender stocks which must be carried in order to give prompt service. If the fender design is changed with each body model, the space and stock required soon become a great burden. Often the difference between one fender and another is insignificant, consists chiefly in a change in the location of a bolt or screw hole, due, no doubt, to the fact that the change is left to some draftsman who has no conception of the far reaching effects it may have.

Much of this sort of thing can be avoided by having some competent man, charged especially with caring for subjects of this kind, check all drawings to insure against all avoidable variations which mean increased parts inventories.

Are Split Leathers Better Than Grain?

LEATHER manufacturers and persons familiar with automobile trimming materials long have accepted as axiomatic the assertion that "splits," as they are called, are at best a cheap and inferior substitute for genuine grain leather.

There the matter rested as long as anyone in the trimming business appears to remember, and there it would be today had not K. L. Herrmann and a few other inquisitive individuals connected with the Society of Automotive Engineers, aided and abetted by one or two men in the leather manufacturing line, started to find out whether there was any substantial ground for such an "axiom."

About the first thing they found was that leather strength tests were not available nor customary and that established standards were entirely lacking. Nevertheless, these persistent engineers determined to "pull" a few samples of leather on standard testing machines such as are used in textile industries.

They found that the first split turned was several times as strong as the grain and the second and third splits were progressively stronger than the first. This was true of numerous samples tested, and much the same was learned in respect to tearing as had been found in reference to tensile strength. It developed that the "split" did not have quite the same soft "feel" as the grain piece, but then it was found that, by giving the split as much care in tanning and other processing as the grain leather had received, it could be made to have a feel substantially the same as that of the latter.

It is realized, of course, that tests in actual service over a period of years will have to be made before the superiority of split leather for upholstery purposes is fully established, but the industry gives serious consideration to the findings disclosed by these tests. If fully substantiated, they will mean savings of many millions of dollars for the industry.

Railroads Approve Motor Trucks

DEVELOPMENTS in the supplemental use of motor trucks by railroads to coordinate the movement of freight are becoming more and more common as the carriers grow familiar with the flexibility of the newest form of transport. Operations which are regarded as experimental today will become routine practice in a few months. Much of the credit for pioneering belongs to the Pennsylvania Railroad, but several others are almost abreast of this system in their development work.

Methods devised by the Pennsylvania for handling l.c.l. shipments by truck, especially to supplant "peddler" trains and between break-bulk points, are familiar to the industry. The New York Central now has adapted this system to its own lines by making Yonkers a receiving depot for l.c.l. shipments from White Plains south through the Metropolitan area. Trucks leave Yonkers daily with shipments for White Plains and other points south on the Harlem division, picking up return loads which are taken back to Yonkers. L.c.l. shipments for the Putnam division also are trucked to Yonkers.

Not only has it been possible to eliminate one of the two daily local freight trains between White Plains and Westchester Avenue, New York, but in many cases a saving of from one to two days has been effected on shipments over the Hudson division by avoiding the congested tracks in the Metropolitan district.

So successful have these operations been that they soon will be extended from Yonkers to Poughkeepsie with the elimination of no less than four trains.

Another development which may be expected in the near future in the New York district will be in relation to the transfer of freight from the terminals on the New Jersey side to Manhattan Island. Recent estimates show that between 5,000,000 and 6,000,000 tons of freight annually are brought across from the Jersey side on barges, at heavy expense.

The Erie Railroad has been experimenting for a year with the transfer of freight by truck from its terminal to Manhattan by the use of ferries across the Hudson. This has resulted in a reduction in costs of from 80 cents to \$1.60 a ton. Competing lines have been much impressed by this showing and are having preliminary studies made. It is not probable, however, that the work will be undertaken on a large scale until the completion of the vehicular tunnel to the Jersey side in 1926.

When the automotive industry convinced operating officials of the carriers that motor trucks could be made an ally they made a long step forward.

Automotive Excise Taxes Are Cut

Truck Below \$1,000 Has Levy Taken Off

50 Per Cent Reduction Made on Parts and Accessories—Cars Remain Unchanged

WASHINGTON, Feb. 28—Without a record vote but practically unanimously the House of Representatives decided today to eliminate practically \$25,000,000 from the automotive excise tax burden which the motorists of the country have been carrying.

The vote was upon an amendment offered by Representative McLaughlin, Republican, of Michigan, to the automotive section of the tax bill reported by the Ways and Means Committee. The amendment provides that:

1. Automobile trucks and automobile wagons or the chassis thereof selling for \$1,000 or less shall be exempt from the 3 per cent tax which the present statute imposes.

2. A tax will be levied hereafter only upon the amount in excess of \$1,000 for which these vehicles sell. Only heavy duty trucks will be included, therefore, in the taxpaying category.

3. A reduction of 50 per cent in the tax now imposed on repair parts and accessories by cutting the rate from 5 per cent to 2½ per cent.

No change was made in the tax of 5 per cent on passenger cars.

Removal of the truck tax will cost the Government about \$3,600,000 in revenue, and the reduction in the parts tax about \$20,000,000.

The amendment was offered by Mr. McLaughlin at the request of Representative Robert H. Clancy of Michigan.

Important Victory for Industry

The victory is the most important of a political nature ever won by the automotive industry and the motorists of the country. Three weeks ago the fight seemed hopeless, but the campaign of education which was launched then resulted in such a flood of protests against the discriminatory excise levies on automotive products that Congress finally realized the worm had turned.

The battle in the House was merely the first major engagement, however. The Senate must next be convinced that the automotive tax reduction should remain. After that the real contest will come in the conference committee, which will compromise the individual measures passed by the two houses.

A strong tactical advantage has been given by the action of the House, however, and there is every reason to be-

lieve that the Senate will not resist seriously acceptance of the automotive sections in the House bill.

Even if the compromise measure agreed upon by committees representing both branches of Congress is finally passed and goes to the President, it remains to be seen whether he will sign it, inasmuch as it will only remotely resemble the original Mellon plan. There is every reason to believe, however, that unless it is a greater monstrosity than now seems probable, Mr. Coolidge will not place himself, on the eve of a Presidential campaign, in the position of refusing tax relief to the country even though it may not be as scientific as he desires.

Hot Battle on Floor

The action of the House on the automotive excise taxes followed one of the fiercest little political battles which has taken place on the floor thus far this session. In this struggle Representative Robert H. Clancy of Michigan, who fathered relief for the motorists of the country, was flattened under the Republican organization steam roller; he almost had a fist fight with Representative Garner of Texas, whose tax plan has virtually been accepted as a substitute for the Mellon plan. Representative Longworth, the Republican floor leader, rebuked his colleagues for discourtesy to Representative Garrett, the minority leader, and Representative Graham of Illinois, chairman of the Committee of the Whole House, who was presiding, got all tangled up in parliamentary barbed wire.

Representative Clancy has done yeoman service for automotive tax relief, and the lion's share of credit for what has been accomplished belongs to him, although he would have been helpless had not manufacturers, dealers and motorists been aroused to the necessity of personal and aggressive communications to their representatives. It was the flood of telegrams and letters from constituents which finally turned the tide.

Clancy Lined Up Forces

It was Mr. Clancy who lined up the Democrats in favor of tax relief after the Republican majority on the Ways and Means Committee had turned it down, notwithstanding all the protests voiced at the hearings given by the committee. Little attention was paid to his efforts by the majority until it became apparent that refusal to grant reductions might mean votes in the coming election. Then the Republicans bethought themselves that there are 15,000,000 motor vehicle owners in the country.

Representative McLaughlin, Republican, of Kalamazoo, a member of the Ways and Means Committee, voted in committee against the reductions asked,

(Continued on page 539)

Production Showing Gain of 12 Per Cent

Likely That High Schedules First Part of Month Will Continue Through March

NEW YORK, Feb. 25—Reports from automobile producing centers for the first part of February show an increase in operations of 12 per cent over the same period in January and a much greater percentage of increase over a year ago. It is certain that there has been no curtailment of schedules since these reports were received and that as good a pace will be maintained through March. If total output for February does not reach the figures recorded in the best production months of last year it will be because of the fewer working days for factory activities.

Programs continue to be stepped up in plants which have not reached capacity, and conditions point to the probability that all major manufacturers will be running at top speed soon after March 1. Smaller plants are moving along at a high level, reflecting the current demand and the feeling that the coming spring will prove to be an exceptionally good selling season.

Enthusiasm at Shows

This feeling is based chiefly on the interest apparent at automobile shows. Enthusiasm on the part of both prospective buyers and dealers is marked, sales from the floor are being made in greater volume than heretofore and dealer orders are large. Only a few sections of the country are not responding to the appeal to the limit, due to local conditions which are likely to be improved before the spring season is well under way.

Despite the fact that shipments from factories to distributing centers against spring demand continue heavy, a feeling persists in some quarters that there will be a shortage of cars when the rush of buying commences. Producers have experienced no difficulty in making prompt shipments, rail facilities in January proving ample regardless of the heavy demand made on them. What surplus of freight cars that might have existed was absorbed by the industry during the

(Continued on page 538)

Fixing of Used Car Price Frowned Upon

Dealer Association Charged by Government with Suppressing Competition

WASHINGTON, Feb. 26—Automobile dealers who cooperate to fix maximum prices at which they will take in used cars may lay themselves liable to Federal prosecution, the Federal Trade Commission indicated today.

A formal citation was issued against the Boston Automobile Dealers' Association, charging it with following such practices, and alleging that it is unlawfully engaged in suppressing competition. The association will have thirty days in which to answer the complaint.

Nearly all the automobile dealers in the Boston area are included in the association, the commission said, adding that the effect and object of the system complained of is "to suppress competition, especially in the sale of automobiles in the territory served."

Practice Had Been Discontinued

BOSTON, Feb. 27—The Boston Automobile Dealers' Association, which operates the Boston Used Car Statistical Bureau, will reply to the Federal Trade Commission's citation as soon as a meeting of the board of directors can be held. At present a majority of the members of the board are out of the city.

In the meantime it may be stated that the practice complained of by the commission was discontinued by the bureau several months ago. Inasmuch as the commission was not formally notified of the discontinuance of the maximum allowance arrangement, it is assumed that the Federal authorities believed the arrangement which was in force when investigators for the commission were in Boston early last summer was still in effect.

Early last fall the Used Car Statistical Bureau was transformed into an educational bureau which is campaigning by means of lectures and motion pictures throughout New England to inform the automotive trade on the fundamentals of good business with special attention to the causes of used car profits and losses.

Has Information Service Now

As far as used car prices are concerned all that the bureau now conducts is an information service. The bureau receives from a large majority of the Boston dealers weekly reports of the prices obtained for various makes and models of used cars sold. These prices are averaged for each make and model and are reported to the cooperating dealers once a month, thus furnishing a guide for used car appraisals.

The bureau is continuing its "black book," a looseleaf book of allowance prices on all makes and models of cars sold in the Boston territory. The prices listed in the book, like the monthly report, are intended as a guide in making

Too Many Models Tax Manufacturing Resources and Make Economies in Operation Impossible

AN INTERVIEW WITH LON R. SMITH,
President of the Columbia Motors Co.

By D. M. McDonald,
Detroit News Representative of the Class Journal Company

Detroit, Feb. 27.

TAKING over the reins of the Columbia Motors Co., Lon R. Smith, well known in the industry for his connection with several of the large engine producing companies, and latterly as a sales and advertising counsel in Indianapolis, is planning an active merchandising campaign with the new company which he is confident will bring the company largely increased business.

In a talk this week, Mr. Smith outlined several of the plans he has in mind, based upon his experience in the industry and a study of the factors which have been instrumental in bringing companies which are now recognized leaders to the fore. All companies can't be leaders at the same time, he said, but there is no reason why companies temporarily in the background shouldn't advance and become stronger if they go after business in the right way.

Admitting, he said, that fifteen or twenty companies dominate the industry to the extent that the large bulk of present day buying is divided among them, a large part of the responsibility for this condition is due to the fact that the companies entitled to larger business than they have been getting have not gone after it in the right way.

The time will never come in this industry, Mr. Smith said, when its product can be so standardized that it will meet the requirements of the entire buying public, or even the largest part of it, nor does he consider that even the variety in models presented by fifteen or twenty companies will meet the tastes of the buying public generally. It is in this fact that he traces the possibility for good business for the smaller companies, and as they interpret the buying taste from year to year he sees their opportunity to become contenders for leading positions.

One of the mistakes of the smaller companies, he said, has been the manufacturing of a wide line of models in an effort to meet as many buying requirements as could be anticipated. The strong companies of the industry have become successful on entirely the opposite theory: the concentration of manufacturing on a set group of models and the educating of their dealers in the sale of them.

Too many models impose a tax on the manufacturing resources of any company and make production economies impossible. By designing a small, compact line which meets essential buying requirements, manufacturers are in a position to manufacture at lower cost and can pass a good share of these economies on to their dealers and to the buyer. Dealers can sell a smaller line with better advantage to themselves.

The general sentiment of the car buyer as expressed in the purchases of the last few years emphasizes the fact that price is not the most important consideration in effecting sales. Popularity of sport types and special models carrying additional equipment has made this evident. What the public is seeking probably more than anything else is good body work, and manufacturers whose businesses have shown the largest gains in the last few years have been helped by taking advantage of this more than through any other single means.

used car appraisals and are based on sale prices of used cars as reported to the bureau. In the book dealers are warned to allow for reconditioning and selling costs in making appraisals and resale prices.

The "black book" has been sold to dealers throughout New England generally and also in some other parts of the country.

Action Will Promote Caution

NEW YORK, Feb. 27—The citation issued by the Federal Trade Commission against the Boston used car plan, which has been materially modified since the Federal investigation of the Boston used car market, brings to the front the repeatedly asked question as to whether it is legal for dealers to combine in any

way to influence the prices allowed for used cars taken in part payment on new cars.

In some States dealer associations have been advised that such operations would be illegal, while in others they have been practiced with or without the advice of attorneys and without interference on the part of State authorities.

The citation just issued in Washington indicates the opinion of the Federal Trade Commission that a maximum allowance or cooperative appraisal arrangement among dealers may be illegal under the Federal laws.

The Boston development is likely to prompt dealers in many trade centers, who are practicing or contemplating used car cooperation, to submit their plans to legal counsel so as to be assured of their propriety under Federal and State laws.

Chandler Last Year Made \$2,055,267 Net

This Was Equivalent to \$7.34 a
Share as Against \$6.09
Reported in 1922

CLEVELAND, Feb. 26—Nineteen twenty-three was the best year the Chandler Motor Car Co. has had since the boom times of 1920, according to its annual statement, issued today. This shows profits of \$4,012,189 in 1923 as compared with \$3,952,572 in 1922 and \$1,890,319 in 1921.

The company's total income for 1923, including that derived from other sources than operations, was \$4,041,373, against \$3,995,778. After all general expenses, reserves for taxes and other deductions, \$2,055,267 was reported available for the stock, equal to \$7.34 a share on the 280,000 shares. In 1922 the company reported earnings equal to \$6.09 a share.

The detailed statement shows the net profits to have been \$2,055,267, against \$1,705,788, with Federal taxes of \$295,752. Dividends amounted to \$1,680,000, the same as in 1922, while the surplus is \$375,267, as compared with \$25,788. The profit and loss surplus is \$4,003,184 as against \$3,627,917.

The balance sheet shows cash holdings of \$695,350, against \$584,975; accounts receivable, \$271,290, compared with \$411,645; notes receivable, \$180,665, against \$43,482, and inventories, \$3,323,106, contrasted to \$2,605,908. Accounts payable totaled \$1,170,401, compared with \$787,160, and notes payable, \$450,000, against \$800,000.

Phelps Forms Company for Sale of Taxicabs

KALAMAZOO, Feb. 27—Organization of the Standard Cab Co. is announced by William Elliott Phelps, who recently resigned as general sales manager of the Roamer Motor Car Co. The new concern, backed by New York and Baltimore capital, is formed to sell cabs.

Mr. Phelps has closed a contract with the Motor Products Co., Grand Rapids, to build the cabs. He will have charge of sales and distribution.

Harry M. Robins Resigns as Head of Foreign Sales

DETROIT, Feb. 25—Harry M. Robins has resigned as director of foreign sales of Dodge Brothers, the resignation being effective as of Feb. 21. In making his announcement, Mr. Robins declares that he has made only tentative plans for the future, but indicates that he will continue to interest himself in the development of motor trade overseas.

The position made vacant by the resignation of Mr. Robins will not be filled until about March 10, it was declared at the executive offices of the company, owing to the absence of a number of offi-

cials in the sales department, who are on the Pacific Coast for the San Francisco show.

Mr. Robins has been a member of the company's sales organization since 1914 and in all of that time has specialized in foreign trade developments. He was formerly manager of the Continental Motors Corp.

George E. Goddard, who has been assistant chief engineer of the company, has announced his resignation, effective March 1. The resignation of A. E. Houghton as director has also been announced.

Vesta Drops Branches That Yield No Profit

CHICAGO, Feb. 27—Vesta Battery Corp. started 1924 free of unproductive incumbrances, according to its annual report. It has discontinued its unprofitable branches and its generator business, and an inventory write-off of \$88,600, it is declared, leaves it in a position to go ahead on a more satisfactory basis.

The corporation effected a saving in overhead expenses of 21 per cent during the last half of 1923. The company's surplus was reduced \$212,000 during the year the amount of the preferred dividend.

Bassick-Alemite Earned \$7.11 Share on Common

CHICAGO, Feb. 27—Bassick-Alemite Corp. in its annual report shows net income, after charges and taxes, of \$1,422,583, equivalent, after preferred dividends, to \$7.11 per share on the 200,000 shares of non-par common stock.

After payment of dividends and a charge of \$102,421 for amortization, a balance of \$925,514 was added to surplus, increasing the net worth of the common stock to \$5,594,161, or \$27.97 per share. Prospects for 1924, according to officials of the company, are exceedingly bright, and greater stability in prices is reported.

Motor Boats to Be Made by Racine Body Builder

RACINE, WIS., Feb. 25—The Racine Manufacturing Co., manufacturer of inclosed bodies, is about to embark upon a new line of production, namely, steel-hulled motor boats of the high speed type. It is reported that an arrangement has been effected with the Dodge interests by which a production of 5000 to 10,000 craft a year will be marketed, and it is said the design will embrace the Dodge power plant, also used in the Graham truck, as stock equipment.

The speed boats are said to be capable of 55 m.p.h., with a normal speed of 30 to 35 m.p.h. The manufacture of bodies will not be affected by the new line. The Racine company is a pioneer in the manufacture of sheet metal bodies, and its plant will require but inconsequential retooling in the establishment of the motor boat department.

Lon R. Smith Named Columbia President

Succeeds J. G. Bayerline, Re-
signed—Changes in Merchan-
dising Policy Forecast

DETROIT, Feb. 25—Lon R. Smith, widely known as a merchandising executive in the industry, has been selected president and general manager of the Columbia Motors Co., succeeding J. G. Bayerline who has retired. The change in executives is understood to forecast a general change in the merchandising policies of the company which will come under the immediate direction of the president.

Associated with him in the affairs of Columbia will be Fred Wilson, who will take over the position of sales manager, succeeding D. J. Willoughby, who has resigned to become identified with the sales department of the Studebaker Corp. Mr. Smith and Mr. Wilson have been together in the firm of Smith & Wilson, Inc., of Indianapolis, marketing counsel for a number of important manufacturers specializing in automotive merchandising.

The appointment of the new president was made at a meeting of directors this week, which also acted upon the resignation of Mr. Bayerline, which had been pending for some time. Mr. Smith assumed the duties of the position at once and will be joined by Mr. Wilson before March 1. At the same time T. E. Barthel, who has been secretary of the company, was named treasurer, combining the two offices. Mr. Bayerline is planning a vacation trip which will take him to Florida for several months and will later take a trip abroad.

Limited Number of Models

Plans of the company under the new administration are understood to contemplate the establishment of a limited number of models upon which it will concentrate its production and sales effort. These will be all under the Columbia name. Servicing of the former Liberty line, taken over at the time of the sale of the Liberty company to Columbia, has been sold to the General Parts Corp. of Flint.

The company has the nucleus of a good sales organization, Mr. Smith says, and beginning at this point, every effort will be made to obtain representation in every part of the country. Since the first of the year dealer territory has been extended gradually, and the volume of business in the first two months compares favorably with that in any other year. The general business outlook throughout the country is good, Mr. Smith states.

Mr. Smith is known in the industry for his connection with the merchandising of the Buda engine and later with the Midwest Engine Co. Previously he was associated with the Eisemann Magneto Co.

Receiver to Protect McGraw Tire Assets

Court Also Issues Injunction
Stopping Possible Law Suits
— Company Solvent

CLEVELAND, Feb. 26—William H. Marlett, attorney of this city, has been appointed receiver for the McGraw Tire & Rubber Co., which operates a big plant at East Palestine, Ohio. His bond is \$25,000.

The appointment was made by Federal Judge D. C. Westenhaver at the request of the Connecticut Mills Co. of Boston, which is a creditor to the extent of approximately \$65,000. The applicant for the receiver said in its petition that the McGraw company is indebted to it on a promissory note amounting to \$99,534, which is dated July 1, 1923, and that on this note three payments have been made. It is alleged also that the company is indebted to other creditors in the amount of \$500,000.

The petitioner states that the McGraw company has not sufficient cash on hand to meet the amount due on the note and to pay other bills past due and maturing in the near future, and that while the assets exceed the liabilities, the company has not been able to renew the note, or to get extensions of credit. With such a situation prevailing and with creditors clamoring for their money, it is stated the interests of the company demanded the appointment of a receiver with full power to act and to protect the interests of this solvent company.

In appointing the receiver, the court issued an order which will permit the receiver to operate the plant free of the embarrassment of law suits. An injunction was issued restraining creditors and stockholders from suing the company.

The McGraw Tire & Rubber Co. has a capital of \$50,000 7 per cent cumulative preferred stock and 100,000 shares of no par common. Of this, the no par stock is outstanding, as is \$2,500,000 of the preferred stock. The assets of the company are said to be several hundreds of thousands of dollars in excess of the liabilities.

Production in January Reached 316,093 Total

WASHINGTON, Feb. 26—Revised production figures of the automobile industry show that the 186 actively engaged manufacturers produced in January, 1924, a total of 316,093 passenger cars and motor trucks, compared with 243,539 in January, 1923, and 91,272 in January, 1922. For the entire year of 1923 revised figures of the United States Department of Commerce show that the year's production of passenger cars was 3,636,767, as against 2,339,768 in 1922, and truck output 376,106 in 1923, compared with 246,281 in 1922.

The figures on production for last year

and January of this year, with comparisons for 1922, which also includes fire apparatus and street sweepers, are as follows:

Passenger Cars			
	1922	1923	1924
January	81,696	223,819	287,296
February	109,171	254,773	.....
March	152,962	319,770	.....
April	197,224	344,639	.....
May	232,462	350,410	.....
June	263,053	337,362	.....
July	225,086	297,330	.....
August	249,492	314,373	.....
September	187,694	298,911	.....
October	217,566	335,023	.....
November	215,352	*284,923	.....
December	208,010	*275,434	.....

Motor Trucks			
	1922	1923	1924
January	9,576	19,720	23,797
February	13,350	22,161	.....
March	20,022	35,260	.....
April	22,640	38,056	.....
May	24,097	43,678	.....
June	26,298	41,145	.....
July	22,046	30,663	.....
August	24,692	30,829	.....
September	19,462	28,638	.....
October	21,795	30,166	.....
November	215,352	*284,923	.....
December	20,354	*27,720	.....

*Revised.

Timken Bearing Earned \$6.74 Share Last Year

CANTON, OHIO, Feb. 26—After providing for all expenses and charges, the Timken Roller Bearing Co. reports a net profit of \$8,090,803 for 1923, compared with \$7,724,029 in 1922. This is equivalent to \$6.74 a share on the 1,200,000 shares of no par value stock outstanding, as against \$6.43 a share the previous year. This profit comes, moreover, after the company had spent \$1,550,000 for plant expansion during the year.

The company's balance sheet as of Dec. 31, 1923, shows current assets of \$15,418,095 and current liabilities, other than tax reserves, of \$1,325,342. Current assets include cash and securities aggregating \$6,917,381.

The detailed income account includes manufacturing profit in 1923 of \$12,523,903, against \$10,925,150 in 1922; selling expenses, etc., \$2,524,183 compared with \$1,613,450, leaving a profit of \$9,999,720, contrasted to \$9,311,700. Other income provided \$385,063, giving a total income of \$10,384,783, compared with \$9,754,959.

Depreciation is charged at \$1,162,980, against \$930,930, and Federal taxes, \$1,125,000, as against \$1,100,000, making the net profit \$8,096,803. New common dividends paid totaled \$4,200,672, leaving a surplus of \$3,896,131, contrasted to \$4,992,602. The profit and loss surplus in 1923 was \$14,725,151, against \$10,829,020.

ROLLIN MAKING 35 DAILY

CLEVELAND, FEB. 25—The new Rollin Four, which was brought out this year by Rollin H. White and associates, has met with such success that the factory in this city is turning out thirty-five of the cars a day.

Cut in Price Caused Loss to Kelly Tire

Good Sales Year Reported with
Substantial Profit During
First Half Year

NEW YORK, Feb. 25—Price cutting the last half of the year is said to have been the cause of the net loss of \$1,166,284, shown in the annual report of the Kelly-Springfield Tire Co. President A. L. Scheuer, in a statement, declares that the first half of 1923 showed a substantial profit, but, despite the fact the company sold the largest number of tires and tubes in its history, the price war of the last half wiped out that profit.

The company during the year retired \$1,000,000 of its 8 per cent notes and reports that the business outlook for 1924 is encouraging.

Gross profits on sales before depreciation is shown at \$9,559,804 in the report; net profits from operation, \$762,407; other income, \$345,130, and total income, \$1,107,537. Deduction for interest on the company's ten year 8 per cent sinking fund gold notes was \$770,000, and other deductions, including depreciation, totaled \$1,503,821.

The balance sheet as of Dec. 31 showed:

Assets: Cash, \$1,782,495, against \$1,836,462 in 1922; accounts and notes receivable, less reserve, \$4,226,294, compared with \$5,602,832; inventories, \$9,297,351, against \$8,018,034; sundry investments, \$25,691, contrasted to \$27,576; property and equipment, etc., less depreciation, \$21,915,322; against \$22,222,181 and deferred charges, \$731,214, against \$669,027.

Liabilities: Trade account payable, \$103,151, against \$435,625; notes payable to banks, \$3,435,600; balance due customers and accrued allowances, \$131,669, compared with \$15,751; accrued taxes, \$479,817, against \$795,104; accrued interest, \$102,500, against \$100,000; preferred dividends payable, \$44,250, contrasted to \$45,000; reserve for contingencies, etc., \$384,379 as against \$210,104; ten-year 8 per cent sinking fund notes, \$9,000,000, against \$10,000,000 8 per cent preferred stock, \$5,264,700, compared with \$5,444,700; 8 per cent preferred stock, \$5,264,700, against \$5,333,700; common stock, \$9,096,002, against \$9,096,002; appropriated surplus under certificate of incorporation, \$1,403,700, compared with \$1,136,600 and general surplus, \$5,638,045, against \$8,231,956.

Dura Attention Turned to Closed Car Fittings

TOLEDO, Feb. 25—The Dura Co. is turning its attention to the artistic and mechanical improvement of dome lights and other fittings for the interior of closed cars, while continuing the manufacture of window regulators which it has been producing for many years.

Three designs of fittings for various grades of cars are now being manufactured in different kinds of finish. No solder is employed in the dome lights which Dura makes and these can be assembled without the use of tools.

Studebaker Invites Smaller Investors

**Plans New Stock Issue So That
There May Be Wider Distri-
bution of Shares**

NEW YORK, Feb. 27—A split-up of shares on the basis of two and one-half to one is contemplated by the Studebaker Corp., which, at its directors' meeting held in South Bend yesterday, decided to call a special meeting of stockholders April 1 for the purpose of authorizing the issuance of 2,500,000 shares of no par common stock in place of the 750,000 shares of \$100 a share par value now outstanding.

Approval of this plan of changing the financial structure of the corporation will be followed by the issuance of two and one-half shares of new, no par value stock, in exchange for each share now held. This will call for the distribution of 1,875,000 shares of the new stock, while the balance will be held in the treasury of the company for future needs.

The outstanding common stock of \$100 a share par value now carries with it dividends at the rate of \$10 a share annually, so that on this basis the new stock should carry annual dividends of \$4 a share, or \$1 quarterly.

President A. R. Erskine in a statement explains that the change is planned in order to bring about a wider distribution of Studebaker stock and increase the number of stockholders. He feels that \$100 a share par value common stock is beyond the reach of the small investor and he aims to encourage the participation in the corporation's business of employees, dealers, car owners and investors generally.

"Voting rights of the 7 per cent preferred stock now outstanding will not be affected in any way by the proposed change in the common stock, as an amendment will provide that the holders of the new common shall be entitled to only one vote for each two and one-half shares," Mr. Erskine explains, "and the holder of less than two and one-half shares of such common stock shall not be entitled to vote."

New Mitchell Company to Service Cars Only

DETROIT, Feb. 28—The Mitchell Motor Car Co. of Racine, Wis., as formed by the General Parts Corp. of Flint, Mich., is an adjunct of the latter concern which will specialize exclusively in the servicing of Mitchell cars now in operation and which will not manufacture Mitchells, as recently reported.

In purchasing the service business of Mitchell, the General Parts Corp. also bought the right to use the name Mitchell in a company to take care of this business. A subsidiary, the General Parts Corp. of Wisconsin, also has been formed to meet legal requirements. Officers of these companies are the same.

A plant has been taken over in Racine which will house the Mitchell company. It is planned to maintain it so long as there are any Mitchell cars to be serviced. Manufacturing operations of the company will be solely to provide parts for the Mitchell cars now operating. The company is building, as a preliminary to undertaking this work, 300 Mitchell engines and other incidental parts.

In addition to the list of cars announced which the General Parts Corp. is handling, it also controls the service rights to the Standard Steel car.

Servicing rights to the Earl and Briscoe cars have been bought by the Standard Motor Parts Co. of Detroit.

S. A. E. Summer Meeting Dated for Spring Lake

NEW YORK, Feb. 27—Spring Lake, N. J., has again been chosen for the summer meeting of the Society of Automotive Engineers. The sessions will be held June 24-27.

It has been definitely decided to hold the S. A. E. annual meeting in Detroit next January, while the motor transport session is scheduled for New York in May. A joint service meeting with the National Automobile Chamber of Commerce will be conducted in Cleveland, Nov. 18-19, and the production meeting will be held in Detroit, Oct. 21-24. An aeronautical gathering will be held in Dayton at the time of the Pulitzer race.

Hayes Plans Acquiring Stock of 3 Companies

DETROIT, Feb. 26—Stockholders of the Hayes Wheel Co., Jackson, Mich., will meet March 25 to act on a proposal to issue \$1,850,000 in preferred stock for the purchase of all outstanding stock in the Hayes Truck Wheel Co. at St. Johns, Mich., the Albion Bolt Co., Albion, Mich., and the Morrison Metal Stamping Co., Jackson. The new stock would bear interest at 7½ per cent and would be exchanged on an even basis for the stock of other companies.

The Morrison and Albion companies are of comparatively recent origin and have been manufacturing almost entirely for the Hayes company and to this extent have been controlled by the latter. The Morrison plant is located on the Hayes property at Jackson. The Hayes Truck Wheel plant at St. Johns has been regarded as a subsidiary of the main Hayes company. According to Hayes officials, stock of none of these companies has been controlled by the Hayes company previously.

Plans for operation of the new plants under Hayes control will not be set forth until after formal ratification by stockholders. It is declared the new companies will probably maintain their identities and that the factory organizations will remain about as before. No change in officers of the Hayes company is expected under the merger plans, though the board of directors probably will be increased.

Engines Being Made to Use Ramage Fuel

**Experimental Work Is Under
Way by Packard and Yellow
Sleeve-Valve Companies**

DETROIT, Feb. 27—Experimental engines with 155 lb. per sq. in. compression are being built by Packard, and Knight engines with 125 lb. compression are being built by the Yellow Sleeve-Valve Engine Works, Inc., East Moline, Ill., for use with the Ramage process fuel.

This fuel, which for a time was manufactured by the Barnsdall company, is said to possess unusual non-detonating qualities. It is only lately, however, that experiments were made to determine whether these qualities are found also under conditions existing with high compression.

That these experiments have at least proved encouraging is evidenced by the fact that engines are now under construction by a local automobile manufacturer for some of the latest Government dirigibles. These engines are stated to have 155 lb. compression pressure.

These engines have been operating on absolute alcohol, which has comparatively low heat value, is expensive and also has the quality of absorbing moisture. These objections are all said to be overcome with the new fuel.

The Detroit Motor Bus Co., whose buses are built by the Yellow Coach Manufacturing Co. and equipped with the Yellow Knight engines, has had a bus running with this fuel in regular service on the streets of Detroit. The engineering department of the Detroit Motor Bus Co. states that, with 125 lb. per sq. in. compression, no knock could be detected and the engines were noticeably more powerful and provided far better pick up.

Plans for Distribution

Plans are under way for the extensive marketing of the new fuel.

Ramage fuel has been developed by the Chemical Research Syndicate, Ltd., headed by F. F. Beall, vice-president of the Gray Motors Corp., and the Barnsdall Corp., New York. The Chemical Research Syndicate is the sole licensee in the United States and Mexico of the hydrogenation process perfected by Dr. A. F. Ramage, by which low grade fuel oils can be converted into motor spirit.

A report of the Barnsdall Corp. in April, 1922, indicated an average yield of 70 per cent of motor spirit from semi-waste oil products.

Leading members of the Chemical Research Syndicate, Ltd., besides Mr. Beall, are J. B. Weaver, vice-president of the Pullman Co., Chicago; Benjamin Briscoe, former president of the Briscoe Motor Corp.; Dr. Ramage, inventor of the process; H. H. Emmons, Detroit attorney, and Rudolph Stahl, of Briscoe & Stahl, consulting engineers.

12,614 Cars Shipped Abroad in January

Volume of Business as Reported
by Government Was Double
That of Year Ago

WASHINGTON, Feb. 26—The year 1924 opened with the export trade running practically double the volume at the same time in 1923, and January of this year was well ahead of December.

This is disclosed in the monthly statistics of exports for the first month of the year, announced today by the Automotive Division of the Bureau of Foreign and Domestic Commerce.

Overseas shipments of passenger cars, totaling 12,614 in January, compared with 10,069 in December and 6040 in January of 1923. The truck exports were 2845 in January, 2066 in December and 1352 in January of the previous year. Details of the shipments are given in the table published below.

BROWN-LIPE-CHAPIN SALES

SYRACUSE, Feb. 26—Officials of automotive plants in this city are very optimistic over the outlook for this year. Sam H. Cook, vice-president of the

Brown-Lipe-Chapin Co., reports that sales so far this year show an increase of 25 per cent compared with January and February of 1923. Other gear companies report similar increases in business and all are working to capacity, several employing night shifts to keep up with production schedules.

J. I. Farley Again Named as President of Auburn

AUBURN, IND., Feb. 25.—After stockholders of the Auburn Automobile Co. had elected Ralph A. Bard, J. I. Farley, H. H. Hitchcock, F. B. Hitchcock, W. C. MacFarlane, J. H. Rose and William Wrigley, Jr., directors, the new board named the following as officers: President and general manager, Mr. Farley; vice-president, Mr. Hitchcock; treasurer, Mr. MacFarlane; assistant treasurer, V. B. Walling; secretary, Mr. Rose and assistant secretary, B. O. Snapp.

Mr. Farley then announced the following staff of executives: Director of sales, R. H. Faulkner; sales manager, E. H. Gilcrest; assistant sales manager, R. S. Wiley; advertising manager, Roy A. Sears; comptroller, Mr. Walling; cashier, Mr. Snapp; assistant general manager and superintendent, P. A. Watson; assistant superintendent, E. O. Penry; purchasing manager, John

Zimmerman; chief engineer, J. M. Crawford; service manager, V. C. Clark and traffic manager, Vern Laird.

Atlas Forge Votes Stock Dividend of 50 Per Cent

DETROIT, Feb. 25—Stockholders of the Atlas Forge Co., Lansing, at the annual meeting voted a capital stock increase from \$700,000 to \$1,000,000 through the medium of a 50 per cent stock dividend. The company in addition will pay a 10 per cent cash dividend.

Officers of the company were reelected as follows: R. H. Scott, president; J. P. Hopkins, vice-president and general manager; B. L. White, treasurer, and E. W. Goodnow, secretary. These officers and R. E. Olds, R. Bruce McPherson, O. C. Hartig and Dr. H. A. Haze comprise the board of directors.

PLANS OF RUGGLES OF CANADA

DETROIT, Feb. 25—Stockholders of Ruggles Motor Truck Co. of Canada are working out a plan to take over the company from the trustees and to continue the business. A levy of 25 per cent of the original holdings of preferred stock, giving about \$170,000, would be made under the plan, which it is believed would enable the company to resume on a sound basis.

Exports of the Automotive Industry from the United States for January of the Current Year and Total for Twelve Months That Ended with January 31

	Month of January				Twelve months ending Jan. 31, 1924			
	1923		1924		1923		1924	
	No.	Value	No.	Value	No.	Value	No.	Value
Automobiles, including chassis.....	7,418	\$5,257,146	15,490	\$11,033,929	50,078	\$37,144,569	90,955	\$65,375,901
Electric trucks and passenger cars.....	26	36,213			195	253,105	92	128,530
Motor Trucks and buses, except electric:								
Up to 1 ton.....	1,095	353,797	1,191	525,354	6,067	2,257,561	11,578	4,691,191
Over 1 and up to 2½ tons.....	205	266,264	355	432,900	1,634	1,940,976	2,578	3,265,703
Over 2½ tons.....	52	120,636	145	306,692	393	1,141,274	814	2,090,311
Total motor trucks and buses, except electric	1,352	740,697	2,845	1,853,033	8,094	5,339,811	16,124	10,635,292
PASSENGER CARS								
Passenger cars, except electric:								
Value up to \$500, inclusive.....	2,099	664,237	4,734	1,787,874	2,099	664,237	29,224	10,573,218
Value up to \$800.....	1,821	1,222,486	3,831	2,554,373	24,420	12,351,633	18,760	12,373,515
Value over \$800 and up to \$2,000.....	1,916	1,996,626	3,768	3,981,281	14,031	15,075,515	25,059	26,891,002
Value over \$2,000.....	204	596,887	281	781,020	1,239	3,460,268	1,665	4,697,996
Total passenger cars, except electric.....	6,040	4,480,236	12,614	9,104,548	41,789	31,551,653	74,708	54,535,731
PARTS, ETC.								
Parts, except engines and tires*.....	242,765	56,356	620,395	132,566	79,316,512	18,618,812	9,193,769	1,608,414
Automobile unit assemblies*.....	22,103,613	4,365,121			242,765	56,356	9,193,769	1,608,414
Accessories, parts*.....	28,940	12,874	357,540	169,533	22,103,613	4,365,121	125,203,670	27,913,939
Automobile service appliances (not elsewhere specified)*.....	10	14,042	8	8,011	28,940	12,874	1,855,594	899,430
Station and warehouse motor trucks.....	108	18,935	47	14,277	64	59,863	144	87,703
Trailers.....	12	203,010	17	164,000	311	127,652	322	101,545
Airplanes (and seaplanes).....	3,974	1,885	5,911	5,736	24	329,810	36	243,421
Parts of airplanes, except engines and tires*					354,364	217,405	193,261	44,444
BICYCLES, ETC.								
Bicycles and tricycles.....	889	10,721	513	11,989	10,399	88,881	15,442	151,455
Motor cycles.....	1,713	391,561	1,821	476,157	9,221	2,182,150	11,833	2,960,731
Parts, except tires*.....	257,233	121,063	315,783	164,565	1,466,577	780,141	1,905,097	1,013,664
INTERNAL COMBUSTION ENGINES								
Stationary and Portable:								
Diesel and semi-Diesel.....	190	25,440	60	46,560	399	186,887	451	171,176
Other stationary and portable.....	1,915	153,127	1,539	158,702	14,729	1,781,589		
Not over 8 H.P.....	97	109,762	174	163,219	1,915	153,127	15,630	1,422,838
Over 8 H.P.....					97	109,762	1,835	1,043,997
Automobile Engines.....	18	8,162	122	10,738	15,619	1,910,857		
Motor trucks and buses.....	1,018	145,319	1,339	178,816	18	8,162	470	57,832
Passenger cars.....	12	6,440	12	3,652	1,018	145,319	14,570	2,183,702
Tractors.....	5	1,200	16	23,700	12	6,440	1,508	381,960
Aircraft.....	415,127	216,772	476,711	208,818	62	25,690	76	68,231
Accessories and parts*.....					3,755,450	1,575,280	4,429,216	1,957,092

* Pounds.

Firestone's Policies on Balloons Outlined

Opposes Manufacture for Existing Standard 23-In. and Larger Size Rims

NEW YORK, Feb. 27—According to F. K. Starbird of the Firestone Tire & Rubber Co., who addressed Firestone tire and automobile dealers here, the Firestone Tire & Rubber Co. is averse to the manufacture of balloon tires for existing standard 23 in. and larger size rims. For the present, at least, the manufacture of Firestone balloon tires for replacement purposes on cars not originally equipped with balloon tires will be confined to the following four sizes: 4.40/21, 5.25/21, 6.20/20, 7.30/20.

Instead of replacement balloon tires on existing rims, Firestone will offer what is termed "unit changeovers," consisting of four balloon tires, four tubes for same, five rims, four wood wheels, one extra band for carrier and a low pressure tire gage. These changeovers are furnished at attractive prices, apparently calculated to influence the purchaser to buy a complete set of small diameter wheels and rims with tires and tubes rather than to substitute balloon tires which other concerns are making for existing standard rims.

Makes Own Wood Wheels

Owing to difficulties in securing wood wheels in sufficient quantities from wheel producers, Firestone is now making in its own plant the wood wheels required for changeovers.

The 5.25/21 in. size offered by Firestone is not included in the list of tires approved by the Rubber Association with which Firestone is no longer affiliated.

Firestone is selling balloon tires with the same guarantee that is given with high pressure cords. It is recommended that snubbers be applied when balloon tires are fitted.

Dealers' prices on the changeover for different sizes are as follows:

No. 1, 4.40/21 in. size.....	\$ 84.20
No. 2, 5.25/21 in. size.....	114.90
No. 3, 6.20/20 in. size.....	163.20
No. 4, 7.30/20 in. size.....	192.00

These prices include four balloon tires, four tubes for same, five rims, four wood wheels, one extra band for tire carrier and one low pressure tire gage.

Suggested Inflation Pressures

Inflation pressures recommended for Firestone balloon tires are approximately as follows: 4.40/21—18 to 24 lb., 5.25/21—20 to 25 lb., 6.20/20—25 to 30 lb., 7.30/20—30 to 35 lb.

The Firestone balloon tires exhibited had a double rib in the center and the usual Firestone cross shaped buttons each side of the ribs. These buttons, however, are smaller than those used on ordinary cord tires. The wire in the bead base has a higher tensile strength, and the rubber at this point is also tougher than formerly. The contour of the tire

adjacent to the bead also is changed. It is said to be necessary to use the highest grade Sea Island cotton in manufacturing the cord fabric.

It was stated that Firestone already has manufactured some hundreds of thousands of balloon tires, and in extensive tests has found them to give somewhat higher mileage than ordinary cords. This is true in spite of the fact that the tread is thinner than that on ordinary cord tires.

Mr. Starbird asserted that many dealers already are doing an excellent business in balloon tires. He mentioned one dealer in a town of 18,000 population who has sold sixty-five sets and recently placed an order for 300 more. He said that dealers should put balloon tires on their own cars and then let the customer drive the car in order to demonstrate the merits of the tires.

It was further explained that the tubes for Firestone balloon tires are now made on curved mandrels and have a thinner side wall of tougher stock than is used in ordinary tubes. The splice is cured by steam instead of by acid, and it is placed opposite the valve to insure proper balance.

Firestone balloon tires are made in approximately the same outside diameter as the regular cord tires which they replace, and this necessitates the use of 21 in. rims on the 4.40 and 5.25 in. sizes and 20 in. rims on the 6.20 and 7.30 in. sizes.

During his talk, Mr. Starbird showed sections of balloon tires which, he said, have run in excess of 20,000 miles and are still in excellent condition, both as to tread and side walls. The difference between ordinary cord and balloon tires was explained. In this connection it was stated that the process of gum-dipping the fabric before it is calendered has made possible the use of an extremely flexible tire.

All Four-Ply Tires

All Firestone balloon tires are made in four-ply and can be run at low inflation pressures with a correspondingly large area of contact with the ground. This large surface accounts in part for the excellent wearing qualities of the tread, which is about as flexible as the side wall.

Firestone has on the press a booklet giving information as to the size of balloon tire required on each make and model of car, the inflation pressure, particulars as to wheel equipment, etc., which the dealer should know.

It is claimed that Firestone balloon tires not only give greater mileage, but that their use results in less fuel and oil consumption and a lower rate of depreciation on the car.

DART TO BE SOLD MARCH 19

WATERLOO, IOWA, Feb. 25—Receiver W. H. Johnson, believing a reorganization is impossible, announces that Judge Boies has issued an order for the sale of the assets of the Dart Truck & Tractor Corp. on March 19. This company was one of the first to enter the field of truck manufacturing.

2 New Ruggles Show Lower Frame Height

Made Possible by Small Wheel, Flatter Springs and Lengthened Shackles

DETROIT, Feb. 23—Two new models, known as 21 and 41, have been added to the Ruggles truck line for 1924. The most notable change compared with previous models is the lower frame height provided by the new small wheel and tire size combined with longer, flatter springs and lengthened spring shackles. The two trucks are of 3000 and 4500 lb. payload capacity with wheelbase of 150 and 148 lb. respectively.

Both have the Ruggles 4 by 5 four-cylinder engine, Brown-Lipe transmission gearset, Brown-Lipe multiple disk clutch with a Columbia three-quarter floating bevel axle on the 3000 lb. model and a Ruggles double reduction gear on the 4500 lb. model.

The final gear ratio on the 3000 lb. model is 5.12 to 1 on direct drive with ratios of 20.5 to 1, low speed, and 8.7 to 1, second speed. On the 4500 lb. capacity chassis the gear ratios are 7 to 1 on direct, 28 to 1 on low speed and 11.8 to 1 on high speed.

Standard equipment includes electric lighting and starting on the 3000 lb. model, without seats or cushions. On the 4500 lb. truck the standard equipment includes seats and cushions and oil lights front and rear. The tire sizes for model 21 are front 30 x 5 pneumatic cord and rear 32 x 6 and for model 41, front 30 x 5 pneumatic cord and rear 34 x 7, solid, or 34 x 7 pneumatic cord, optional at extra cost.

The price of Model 21 is \$1,445 and of Model 41, with pneumatic tires, \$1,945.

In 1923 Peerless Made 35 Per Cent Sales Gain

CLEVELAND, Feb. 25—Supplementing the annual report, which showed net profits for 1923 of \$706,468, the Peerless Truck & Motor Corp. states that its sales represented a gain of almost 35 per cent over 1922, the 5700 eight-cylinder cars sold representing \$21,000,000, against \$16,001,985 realized from the sale of 4240 in 1922.

Current assets of \$5,765,916 are more than nine times the current liabilities of \$636,341, and the entire funded debt of the company has been wiped off the books. The inventory has been reduced from \$5,758,033 to \$3,937,405 and there are no bank loans. Good will has been reduced to the sum of \$1, giving the stock an actual book value of over \$48 a share.

"Commitments already made to us by our branches, distributors and dealers insure us a ready market for our entire building schedule of both eights and sixes to July 1 or later," comments D. A. Burke, vice-president and general manager.

National Motorists Associations Merge

A. A. A. and N. M. A. Will Be Known as New American Automobile Association

WASHINGTON, Feb. 25—Consolidation of the American Automobile Association with the National Motorists Association, the two big national motoring organizations, was perfected here today and formally announced. The consolidation was perfected after a series of three meetings by officials of the two organizations and will be known as the New American Automobile Association, composed of 700 clubs.

The way to consolidation was made easy in the beginning by a prompt and ready agreement to a proposal that the constitution and by-laws of both organizations be eliminated and a new one written, thereby forming a virtually brand new association.

The constitution and by-laws, already written and approved, incorporated the best thoughts of the old, together with some valuable additions in keeping with the ever-changing conditions in the motoring world and the requirements of the individual car owners.

Henry Remains President

The governing board of the new organization will be an executive committee of seven members. It was unanimously agreed that Thomas P. Henry of Detroit, who has been president of the A. A. A. since last May and who is credited largely with effecting the consolidation, should continue at the head of the new organization. It also was agreed unanimously that Judge Walter D. Meals of Cleveland, who has been president of the N. M. A. since its formation two years ago, should become chairman of the board of directors of the new organization.

Practically all of the men who held high honorary positions in both organizations will be chosen for high offices in the new association. Chief among these is Fred H. Caley of Cleveland, who was active in forming the N. M. A. and who has served as its executive secretary without salary for two years. Mr. Caley will probably become secretary of the New A. A. A.

In Charge of Negotiations

The negotiations which led to the consolidation were conducted by the following, acting for the executive boards of their respective organizations: National Motorists Association—Judge Walter D. Means and Frederick H. Caley of Cleveland; J. Borton Weeks of Philadelphia; H. M. Lucius of Baltimore; Henry L. Jost and Donald Latschaw of Kansas City, and Alexander Johnson of Louisville; American Automobile Association—Thomas P. Henry, Col. Sidney Waldon and William E. Metzger of Detroit; Robert P. Hooper of Philadelphia; Frank E.

Jack of Chicago and Major Roy F. Britton of St. Louis.

In entering into negotiations for a consolidation, harmony prevailed from the beginning, and getting together was proposed on a fifty-fifty basis. Equal strength is given to the new association by the old organization, each having about 350 clubs, with approximately the same membership.

This arrangement will be referred immediately to the clubs of each of the national organizations for approval.

Receiver Will Operate Interstate Foundry Co.

CLEVELAND, Feb. 27—Joseph H. Fogg, attorney of this city, has been appointed receiver for the Interstate Foundry Co., one of the largest independent gray iron foundries in the country and engaged in the manufacture of castings for six large automobile companies.

Mr. Fogg will operate the company while unfilled orders are taken care of. With the protection of the court thus assured, plans are expected to be consummated in this period that will place the company on a firm foundation. Assurance was given customers that all orders would be filled.

Coincident with the filing of the application for a receiver was the filing of a bankruptcy petition. Creditors who filed the receivership and bankruptcy petitions are the Stewart Furnace Co., with a claim of \$4,363; the Fisher & Wilson Co., \$3,377, and the Cleveland Cliff Iron Co., \$14,417.

Officers of the company state that lack of working capital caused the financial difficulty. The company operates two foundries in Cleveland and one in Chicago. It is capitalized at \$200,000.

E.-B. Sales Good in 1923 but Did Not Show Profit

ROCKFORD, ILL., Feb. 27—Although sales in 1923 were 20 per cent greater than in the preceding year, the Emerson-Brantingham Co. directors report a net loss of \$2,381,779 during the fiscal year ending Oct. 31, 1923. Sale of the Minneapolis property will materially decrease the current indebtedness without reducing current assets and will benefit the overhead and service cost.

The report says:

Present outlook is generally fair. In some parts of the south where the price and yield of cotton have been satisfactory, and in other sections of the country, returns to the farmers have shown marked improvement and should affect 1924 business favorably; but in the wheat district and especially the northwest, conditions are not yet satisfactory.

The basic nature of this industry and the fact that crops cannot be raised without farm machinery cause us to feel that a large part of the depleted equipment on the farms must be replenished within the next few years and that business in this industry should show steady improvement. It is estimated that at the present there is a shortage of 6,000,000 farm implements on farms in the United States.

Methods Not Unfair, States Kelsey Wheel

Will Make Formal Reply to Gov- ernment Charge and Submit Detailed Report

DETROIT, Feb. 25—Kelsey Wheel Co. will make formal reply to charges of unfair competition filed against it with the Federal Trade Commission at Washington by March 20 in which it will deny allegations made against it and will submit in detail a study of conditions in the sales and service field of the wheel business.

The company's relations and contract with its dealers are strictly in keeping with such relations in the automotive industry generally, the company declares, and it cannot be held for practices by individuals so long as the contract terms are not violated. Its dealers are given sales and service rights in their territories as in the case of most automotive products. The absence of competition from other dealers handling the same products in the same territory is common in the industry.

The citation of the Federal Trade Commission, announced in Washington, charges unfair methods of competition in cooperation with distributors of its products in a plan to maintain resale prices.

The distributors named are Jacob Mat-tern & Sons, Inc., New York; Standard Tire & Rubber Co., Boston; William H. Johnson, trading as Johnson Wheel Co., Philadelphia; H. O. Norris, trading as R. W. Norris & Sons Co., Baltimore; Motor Rim & Wheel Manufacturing Co., Chicago; Motor Rim Manufacturers Co., Cleveland, and Keaton Tire & Rubber Co., San Francisco, Los Angeles, Portland and Seattle.

Charge Agreement on Price

According to the citation, the respondents mutually agreed to abide by a standard price set by the Kelsey company and agreed not to sell the Kelsey products in any territory other than set out in agreements between the individual distributors and the Kelsey company.

Methods of enforcing their resale price plan are outlined in the complaint, among which are the following: coercing distributors and sub-distributors and dealers, through threats of the loss of their business in the Kelsey products, and withdrawing or causing the withdrawal of such business from the hands of distributors or dealers refusing to adhere and enforce such price system.

The respondents' acts, the complaint recites, tend to restrict the distribution; to suppress competition and to enhance prices of the Kelsey automobile wheel and wheel parts.

Under the law whenever the commission has reason to believe that an unfair method of competition has been used against public interest, it must issue its complaint.

Men of the Industry and What They Are Doing

Sloan Back in New York

Albert P. Sloan, Jr., president of the General Motors Corp., has returned to his New York office after three weeks' vacation spent in Florida.

Williams Appointed Service Engineer

R. M. Williams has been appointed service engineer of the Packard Motor Car Co., and C. H. Vincent of the engineering department has been promoted to the position of quality engineer, formerly held by Mr. Williams. The change was made to fill the vacancy caused by the death of H. B. Knap, who became service manager when Packard instituted this department. Mr. Knap had been with the Packard company for thirteen years, joining that company after being graduated from Cornell. He was an active member of the Society of Automotive Engineers and of other engineering organizations. Mrs. Knap, who survives, is a sister of H. B. Church, chief engineer of the Chevrolet Motor Co.

Sparks to Recuparate in Florida

Captain William Sparks, vice-president and active head of the Sparks-Withington Co. of Jackson, Mich., is about to start for Florida to recuperate from an operation for acute appendicitis.

Jennings Joins M. A. M. A. Staff

J. Ross Jennings, former field secretary of the Automotive Equipment Association, has joined the staff of the Motor and Accessory Manufacturers Association in a similar capacity, following the promotion of Field Secretary A. W. Barber to the newly created post of trade observer.

French and Tant Dined

John H. French, former president and general manager of the Michigan Stampings Co., and Walter F. Tant, former secretary and treasurer, were guests at a testimonial dinner given at the Detroit Athletic Club by forty employees of the company which recently was taken over by the Briggs Manufacturing Co.

Weigel Succeeds Hazard

Lee H. Hazard, production manager of the Velie Motors Corp. and associated with that company for fifteen years, has retired and is succeeded by A. W. Weigel. Mr. Hazard is a director of the Tri-City Manufacturers' Association and one of the best known Velie executives in the Middle West.

American Body Appoints McCreary

Chester M. McCreary, regarded as one of the most ardent supporters in the rubber industry of bus transportation and

highway development and for many years connected with the highway development department of the Goodyear Tire & Rubber Co., has resigned to become identified with the American Body Co. Mr. McCreary while at Goodyear was a visitor at practically all good roads conventions held in the United States and made several trips abroad to study bus and highway development. In addition to his regular work, he was chairman and member of the Akron Chamber of Commerce good roads committee for many years.

A. McK. Flint Resigns

A. McK. Flint has resigned as sales manager, central division, of the United States Chain & Forging Co., Pittsburgh. No announcement is made as to his future plans.

Emmons Represents Fabric Maker

Edwin D. Emmons, formerly sales manager of the Hayes Manufacturing Co., and also associated with the Hayes-Ionia Co., has been appointed representative for the Detroit territory by the Bridgeport Coach Lace Co. of Bridgeport, Conn., manufacturer and distributor of automobile upholstery fabrics. Mr. Emmons has located in the General Motors Building, Detroit.

Rogers Now with Kant Rust

Granville P. Rogers, resigning as general sales and advertising manager of the Pyrene Manufacturing Co. of Newark, N. J., has been named vice-president and director of sales of the Kant Rust Products Corp. of Rahway, N. J., in which he has a financial interest. Mr. Rogers makes the change after six years with the Pyrene company.

Willard L. Velie, Jr., Distributor

Willard L. Velie, Jr., son of the head of the Velie Motors Corp., has purchased the principal interest in the Chicago distributing agency for the Velie and takes up his duties there March 1.

Burke Returns to Decatur

Arthur Burke, who resigned as president of the Decatur Pump & Manufacturing Co., Decatur, Ill., last year, to join the Trano Co. at LaCrosse, Wis., has returned to the Decatur plant. He was one of the organizers of the company.

Papworth Assistant Controller

E. F. Papworth has been named divisional controller of the Brown-Lipe-Chapin Co., succeeding C. L. Coe, who becomes general controller of General Motors.

Jones Made Sales Manager

J. F. Jones has been named as sales manager of the Mohawk Rubber Co. of Akron, Ohio.

Livingston Export Manager

G. L. Livingston has been named export manager for the Mason Tire & Rubber Co. of Kent, Ohio, maker of the Mason line of tires. Livingston formerly served as export advertising manager for the Firestone Tire & Rubber Co. Although at present maintaining headquarters at Kent, the company's export office will be removed to New York shortly, and overseas sales will be directed from that point.

Production Showing Gain of 12 Per Cent

(Continued from page 530)

month for the movement of automobiles.

The shipping situation is being watched closely to avoid any interruption to the flow of automotive products, but there is no evidence at present that the railroads are not affording as satisfactory accommodations as they did last month. Driveaways are keeping up, owing to open roads, although their volume has not been much greater than last year despite the much heavier shipments. More cars will be delivered over the roads when spring opens without any likelihood of much of an increase until then.

Truck production is wholesome, with more vehicles being made and shipped and a wider demand reported. Bus output is increasing. As a result of the high operations in motor vehicle plants, allied branches of the industry are proceeding at a good rate. Parts makers are at capacity, for the most part, and see no prospects of slackening for some months.

2 and 4-Wheel Brakes to Have Official Test

WASHINGTON, Feb. 26—The relative value of four-wheel brakes on automobiles compared with two-wheel brakes will be given a thorough test here on March 7 by experts of the Bureau of Standards and the Society of Automotive Engineers.

Cars equipped with these types of brakes will be operated on both the dry surface of a street and also on a street after it has been wetted down by the fire department.

Kemp Heads Agricultural Body

Arthur P. Kemp, formerly an executive of the Auburn Automobile Co., has been elected president of the new agricultural credit corporation that is to aid the Northwest.

Automotive Excise Taxes Are Reduced

Trucks of \$1,000 and Under Have Levy Taken Off—No Re- duction on Cars

(Continued from page 530)

but finally was persuaded they should be granted. He then was asked by Mr. Clancy to propose them on the floor as amendments to the bill when the automotive sections were reached in debate. There was a gentleman's agreement that Mr. Clancy should be given five minutes to explain his position and what he had done.

Section Reached Late Tuesday

It was 5.30 o'clock Tuesday afternoon before the automotive sections were reached, and House sessions usually are adjourned at that hour. It had spent more than five hours arguing about gift taxes, a tax on cigarettes and the repeal of taxes on theatrical admission fees, and the members were weary, but the automotive taxes were important politically and no one wanted to go home until they were out of the way. Mr. Clancy had been on the floor almost continuously for three days, fearful that an attempt might be made to "put something over" in his absence. He was particularly out of luck because of the lateness of the hour and the fact that Wednesday's session had been set aside for memorial services for the late President Harding, so that if action was not taken in the few minutes which remained it would have to go over until today.

What ended in a riot began peacefully enough. Mr. McLaughlin was recognized, according to program, after the clerk had read the automotive sections retaining the taxes as they now exist. As reported by the Ways and Means Committee, the bill provided a tax of 3 per cent on all trucks, 5 per cent on passenger cars and motor cycles and 5 per cent on parts and accessories.

McLaughlin Amendment

The McLaughlin amendment provided that the 3 per cent truck tax should not apply to trucks or to truck chassis sold separately, providing the selling price of the truck or chassis does not exceed \$1,000, and that the tax on parts and accessories should be reduced from 5 per cent to 2½ per cent. He estimated that the loss of revenue on trucks would be \$3,600,000 out of a total now collected of \$10,678,000, and on parts of \$20,400,000 out of \$40,800,000. He said the trucks exempted would include Buick, Chevrolet, Dodge Brothers, Ford, Dort, Gray, Durant, Mason, Maxwell, Overland, Olds, Reo, Star and Vim.

When Mr. McLaughlin's five minutes had expired Mr. Garner asked unanimous consent that he be given five more. Mr. Dyer of St. Louis objected because he did not think so important a question should be considered at so late an hour,

but he later withdrew the objection, and Mr. McLaughlin was given another five minutes although he admitted frankly he had little more to say and didn't care much for the extension.

Mr. Garner then was recognized and proposed that, inasmuch as Mr. McLaughlin had conferred with Mr. Clancy and Mr. Green, chairman of the Ways and Means Committee, as well as other members of the committee, and that there was unanimous agreement the reductions should be granted, it would be a good idea to adopt the amendments and go home without further argument.

Clancy Asks Time to Speak

Mr. Longworth found considerable merit in Mr. Garner's suggestion and asked unanimous consent that a vote be taken in ten minutes, but Mr. Clancy reserved the right to object unless he was given an opportunity to speak for from three to five minutes. "I'm the man who made the agreement on this question," he asserted. Mr. Dyer objected, and Mr. Clancy called for the regular order. Mr. Graham in the chair ruled that the regular order gave the floor to Mr. McLaughlin. Mr. Clancy thought he could clarify the situation if he were given the floor, and Mr. McLaughlin declared he didn't care who got it.

Chairman Green of Iowa moved that debate close at 6 o'clock and Mr. Denison (Republican) of Illinois that it close at 6.30. The 6 o'clock proposal was agreed upon at 5.52, and after another parliamentary wrangle, Mr. Denison was given the floor to offer an amendment to the McLaughlin amendment which provided that all automobiles except tractors should pay 3 per cent of the amount by which the price for which they are sold exceeds \$1,000 and does not exceed \$3,000, and that a 5 per cent tax be applied to the amount by which the selling price exceeds \$3,000.

"I feel," he said, "that we ought to take all taxes off trucks and automobile wagons. They are not luxuries any more. They are things which people have to have to make a living. They are used to carry children to and from school, and they are used in businesses of different kinds. They are used on the farms, around the factories and for transportation purposes, and it seems to me the Congress ought to find some means of financing the Government otherwise than by pyramiding taxes on automobile trucks and wagons and automobile parts and accessories.

Denison Holds Floor

At this point Messrs. Garner, Clancy and several others felt a simultaneous, irresistible urge to speak, but it was ruled Mr. Denison still had the floor and he continued.

"If there is any justification at all for continuing the tax on automobiles," he asserted, "I cannot see any justification at all for longer imposing this tax on repair parts, and that part of this bill ought to be stricken out entirely, because Congress ought not to try to finance the Government on the people's necessities and misfortunes."

This assertion brought applause from the Republican side, although it had been a bit dilatory in finding out about the evil of a tax on misfortune.

At this juncture the steam roller headed a little more directly for Clancy. Mr. Dyer moved for adjournment, and Mr. Crisp protested on the ground that the motion was made to cut off debate and prevent Mr. Clancy from debating the amendment.

Then Mr. Clancy raised his voice.

"I made an honorable agreement with you gentlemen—" He was cut off by the bang of the chairman's gavel.

Mr. Longworth asked unanimous consent that Mr. Clancy be given five minutes, but no unanimity was apparent.

Charges "Double Crossing"

It was at this point that Mr. Clancy, looking straight at Mr. Garner, asserted he had been "double crossed." Mr. Garner accepted the remark as personal: "I haven't double crossed you," he shouted and drew back his trusty right arm. Mr. Clancy squared away, but Mr. Garrett, the Democratic leader stepped between them, and then it was announced that Mr. Clancy had been speaking in general and not of Mr. Garner individually, which was quite a different matter.

While hostilities had appeared imminent, the chair had been appointing tellers on the motion to adjourn. After the ayes and nays had been counted it was found that the motion had been lost.

Theoretically debate had closed ten minutes previously because it was then 6.10. Half the members of the House were on their feet with parliamentary inquiries, points of order and unanimous consent requests. Mr. Clancy was standing his ground pluckily, and now and then his voice could be heard above the din addressing the chair.

Mr. LaGuardia of New York asked unanimous consent to give Mr. Clancy five minutes, but Mr. Free objected. Then Mr. Garrett asked for three minutes. Mr. Young and Mr. Begg objected to that. Here Mr. Longworth interposed, pleading for courtesy for the Democratic leader, but the objections were not withdrawn.

Parliamentary Inquiry

Mr. Clancy couldn't get recognition, so he made a parliamentary inquiry, which couldn't be prevented. Under cover of it he declared vehemently:

"I made an honorable agreement with the dean of the Michigan delegation to give him credit for the battle I have carried on for the repeal of these taxes. The understanding was that I would be allowed a few minutes to back him up. This honorable agreement—"

Again he was silenced by the gavel and demands for the "regular order." This brought up the Denison amendment, and it was lost on a party vote.

Mr. Garrett then moved for adjournment and the motion was carried by the Democrats putting the vote on the McLaughlin amendment over until today.

And thus does Congress deliberate.

J. D.

Parts Sales Better; Collections Improve

Business Done in January Nearly
Tripled That Reported Two
Years Ago

NEW YORK, Feb. 25—One gets an idea of the speed at which the parts and equipment makers are traveling at the present time by comparing January of this year with the corresponding month two years ago. This comparison shows that last month members of the Motor and Accessory Manufacturers Association sold nearly three times as much goods as they did in January, 1922.

January, 1924, sales totaled \$51,028,000, an increase of \$5,576,050, or 12 per cent over January, 1923. This compares with \$17,320,000 in January, 1922. Compared with December, 1923, this January is 17.87 per cent better.

Past Due Accounts Drop

Credit conditions have kept pace with the increased sales. January's past due accounts have decreased 39.23 per cent from December's, showing a total of \$1,698,500, compared with \$2,795,300 in December. A new low point for the last two years is shown in total notes outstanding, decreasing 14.82 per cent from December, with \$744,950, against \$874,550.

Because of the brisk January business in equipment, members of the association look for the motor industry to be operating at capacity in March. They find that already several of the big car makers already are on a capacity basis. They declare that retail business has been so good this winter that attempts on the part of dealers to stock up have failed in great part.

In line with this there comes a statement from Earl McCarty, general sales manager of the Nash Motors Co., who declares that at this time his company is carrying on its books more unfilled retail orders for spring delivery than at any time since the company was established. Mr. McCarty gives the shows great credit for this condition, claiming that reports from distributors and dealers at points where shows have been held disclose in some instances a 200 and 300 per cent gain in show sales. Orders for immediate or spring delivery taken immediately following shows at all these points are a plain indication, he says, of the heavy spring demand that is bound to follow.

Jordan Predicts Big Output

Another optimist is E. S. Jordan, president of the Jordan Motor Car Co., who declares that "economists who are predicting a smaller production than was realized in 1923 will find their estimates far short of the output.

"However," Mr. Jordan says, "the demand for new cars is insatiable. The limiting factor eventually will be deter-

M. A. M. A. MEMBERS REPORT INCREASE IN SALES OF 17.87 PER CENT DURING JANUARY

NEW YORK, Feb. 25—Reports from members of the Motor and Accessory Manufacturers Association show that sales in January increased 17.87 per cent over December, total sales amounting to \$51,028,000, compared with \$43,289,950.

Past due accounts show decrease of 39.23 per cent and notes outstanding a decrease of 14.82 per cent.

The following table presents the sales by members of this association, the total past due accounts and notes held for 1923 and the first month of 1924:

1924	Total Sales	Per Cent Change	Total Past Due	Per Cent Change	Total Notes Outstanding	Per Cent Change
January	\$51,028,000	17.87 Inc.	\$1,698,500	39.23 Dec.	\$744,950	14.82 Dec.
1923						
January	45,451,950	30.94 Inc.	2,469,950	29.33 Dec.	1,945,850	2.11 Inc.
February	48,518,700	6.75 Inc.	2,741,100	10.82 Inc.	1,981,950	1.86 Inc.
March	59,428,800	22.49 Inc.	2,129,350	22.32 Dec.	1,929,300	2.66 Dec.
April	61,647,050	4.00 Inc.	3,313,150	8.05 Inc.	1,839,350	5.00 Dec.
May	58,409,550	5.25 Dec.	1,982,750	14.28 Dec.	1,140,150	38.00 Dec.
June	58,067,500	.059 Dec.	2,191,150	10.55 Inc.	1,111,970	2.47 Dec.
July	48,536,700	16.40 Dec.	2,313,400	5.60 Inc.	1,424,450	28.10 Inc.
August	50,264,100	3.50 Inc.	2,382,370	7.00 Inc.	1,132,250	20.00 Dec.
September	46,222,650	8.04 Dec.	3,583,000	50.39 Inc.	1,322,550	16.80 Inc.
October	53,803,350	16.50 Inc.	2,857,450	20.00 Dec.	1,094,500	17.00 Dec.
November	51,634,670	4.20 Dec.	2,524,850	13.17 Dec.	1,163,800	5.95 Inc.
December	43,289,950	17.00 Dec.	2,795,300	11.00 Inc.	874,550	25.00 Dec.

mined by the ability of the dealer to sell used cars that he will take in trade for the new ones. As a matter of fact, you could deliver 10,000,000 new ones in this country if you could find dealers who were foolish enough to pay the public too much for the old ones."

Shipping Directions Speeding Up

MILWAUKEE, Feb. 25—"Makers of automobiles, motors, bodies, equipment, parts and accessories are booking substantial orders," says the monthly summary of local business conditions issued by Milwaukee's largest bank. This report also says that the number employed on Feb. 1 was 4.1 per cent larger than on Jan. 1 in the automotive industries, while a net gain of 3.5 per cent is reported for all industries on the basis of figures from fifty of the largest concerns in Milwaukee regularly reporting.

"The rubber tire industry started the year with much reduced stocks and definite promise of a larger volume of business," the summary says further. "On the assumption that a tire now lasts two years, the replacement business should be substantially larger in 1924 than in 1923, since the output of motor vehicles in 1920 and 1922 was much larger than in 1919 and 1921."

There has been a noticeable speeding up of shipping directions from motor car factories to parts and equipment shops in Milwaukee since the early part of February, and the forthcoming monthly summary is expected to reveal not only a healthy gain in number employed but the amount of business booked and produced in the units and parts trade, compared with the current report.

EMPORIA ADOPTS BUSES

EMPORIA, KAN., Feb. 26—Motor buses will be substituted for street cars as a result of the special election held here.

Stearns Makes Plans for Sales in Canada

CLEVELAND, Feb. 27—Directors and officers of the F. B. Stearns Co. were reelected at a meeting here at the same time announcement was made that the company had closed a contract that will increase its business \$2,250,000 a year at the minimum.

Louis J. Gauthier of Montreal is organizing a company with \$1,000,000 capital to sell the Stearns cars in Canada, and has closed a contract for a minimum of 500 and a maximum of 1000 cars this year, with deliveries starting March 1. For the next nine years he will take from 1000 to 2000 four and six-cylinder cars a year.

The company also has closed a contract for a distributing agency in Portland, Ore. This is the first agency opened in that part of the West coast.

The officers reelected are: George W. Booker, president and treasurer; P. M. Booker, vice-president, and M. L. Henschler, secretary. The Messrs. Booker and J. R. Krause, S. H. Tolles and Philip Wick are directors.

Auditors are now completing the company's financial report, which is expected to show earnings of \$838,698 for 1923, before taxes and depreciation, but after all adjustments, an earning of \$3 a share on common stock.

The plant at Euclid Avenue and Lakeview Road has been enlarged at a cost of \$1,250,000.

MOTOR WHEEL ELECTION

DETROIT, Feb. 23—Directors of Motor Wheel Corp. were reelected at the annual meeting of stockholders held this week as follows: W. H. Newbrough, H. F. Harper, B. S. Gier, D. L. Porter, C. C. Carlton, J. B. Siegfried, C. W. Nichols, O. A. Jenison and W. C. Brock.

Balance of Engines Discussed by S. A. E.

Section in Detroit Holds First Production Meeting—Many Papers Presented

DETROIT, Feb. 27—At the first production meeting of the year, the Detroit Section of the Society of Automotive Engineers was addressed by men representing many departments of the industry, the subject of discussion being "Balance of Automobile Engine Parts." All agreed that the balancing of crankshafts, both statically and dynamically, has reached a high stage of development, and practice is now rather well defined.

On the other hand, this development with the resultant improved performance has opened up the field for better balance of clutches, fans, universal joints and propeller shafts and has created a demand for equipment that will facilitate better balancing of these parts. It was also generally agreed that static balancing is more satisfactory for flywheels of conventional design.

Engineering Analysis Viewpoint

From the standpoint of engineering analysis, A. A. Bull, chief engineer of the Northway Motor & Manufacturing Co., stated that a correct distribution of the weight of the reciprocating parts is of greater importance than the last degree of static and dynamic balance at the crankshaft. Piston assembly weights as well as rod assembly weights must be held within close limits or the work done in balancing the crankshaft will be nullified.

Problems of balance from the production man's angle were discussed by L. L. Roberts of the Packard Motor Car Co. and D. E. Anderson of the Cadillac Motor Car Co. Mr. Roberts also emphasized the need for better balance back of the engine and described some of the efforts of his company along this line. Propeller shafts are the greatest problem, due to their thin wall section and consequent flexibility.

Mr. Anderson discussed the balancing problems of the Cadillac V-63. As the shaft cannot be put in dynamic balance without an external correction, rings that are equivalent to the weight of the rotating parts and half the weight of the reciprocating parts, are clamped on the rod bearings. All balancing is done by removal of metal from the counterweights, which are made slightly heavy for this purpose.

Balancing Machine Maker Speaks

Balance was also discussed from the standpoint of the balancing machine manufacturer by Jacob Lungren of the Tinius Olsen Co. and Mr. McDonough of the Gisholt Machine Co., both of whom emphasized the need for accurate control of the weight of reciprocating parts and the necessity of closer balance back of

WANTS FEDERAL HELP IN STUDY OF PAINTS

WASHINGTON, Feb. 26—Government aid for an investigation into the nature and use of paints and varnish is urged in a statement sent to the Department of Commerce by the Engineering Foundation.

The question of paint, the statement points out, is intimately bound up with one of the largest industries in the country, namely, the automobile industry. Congress, it is declared, should place at the disposal of the proper bureau the sum of about \$45,000 for research work in the study of paint and varnish and its use in all industry.

the power plant for the achievement of the smoothest running.

H. F. Wood of the Wyman-Gordon Co. outlined the improvements of modern drop forging practice that contribute to better crankshaft balance. He showed how crankshaft deflection can be reduced by the addition of integral forged counterweights.

L. C. Schwab Speaks in Milwaukee

MILWAUKEE, Feb. 25—During the February session of the newly organized Milwaukee group, Society of Automotive Engineers, held last week, the members together with guests from other engineering societies embraced by the Engineers' Society of Milwaukee spent several hours in a trip of inspection of the plant of the A. O. Smith Corp.

In the evening at the Public Library assembly hall, L. C. Schwab, assistant production manager of the Smith company, addressed the group on "Production Problems in a Pressed Steel Plant."

The March meeting, to be held March 14, will bring to Milwaukee the Midwest Section of the S. A. E. for a joint meeting with the Milwaukee group and the general membership of the Engineers' Society.

Wisconsin Speed Limit for Bus Same as Truck

MILWAUKEE, Feb. 25—Some apprehension is felt among motor bus owners and operators in Wisconsin concerning the immediate future of the business because of a ruling by the attorney general of the State that the motor bus, being a commercial vehicle, is subject to the same regulations as prescribed for motor trucks, and in consequence must conform to a maximum speed limit of 20 m.p.h.

Present schedules of motor bus lines have been based on the maximum limit of 30 m.p.h., as for passenger vehicles, and enforcement of the truck limit on buses doubtless will slow up travel to an extent that will be felt in patronage, it is feared.

New Race Mark Made for 122 Cu. In. Cars

Harlan Fengler in Wade Special Averages 116 m.p.h. in 250-Mile Event

LOS ANGELES, Feb. 25—Establishing a new world's record for 122 cu. in. cars in a 250-mile race, Harlan Fengler of Kansas City won in a Wade Special the annual February event on the Beverly Hills speedway yesterday with an average of 116 m.p.h.

Fengler also established new world's records for 50, 100, 150 and 200 miles. He turned 150 miles in 1 hr. 17 min., 14 sec., or 116.2 m.p.h. His time for the 250 miles was 2 hr. 9 min. 14 sec. Jerry Wonderlich finished second to Fengler, Harry Hartz third and Bennet Hill fourth.

The former records for both 150 and 250 miles were held by Earl Cooper with an average of 112 m.p.h. Fengler drove the entire distance without a stop. In taking the honors Fengler won a purse of \$9,000. He defeated sixteen other leading drivers of the country, among them being such veterans as Milton, Murphy, Hearne, Vail, Cooper, Boyer and Durant.

The race was free from accidents, although the crowd was given a thrill when Antone Mourre's car struck the rail and spun around on the track. Mourre was eliminated but escaped unhurt.

Fengler took the lead in the first lap and never was threatened seriously thereafter. At the end of the first ten laps he had averaged better than 118 m.p.h. and he maintained this pace for twenty-eight laps. At the end of fifty-six laps he was one lap ahead of the entire field and seemingly no car on the track had the speed of his Wade Special.

This was the last race to be run on the Beverly speedway before the track will be dismantled.

26 Per Cent Sales Gain Reported by Hart-Parr

CHARLES CITY, IOWA, Feb. 26—The balance sheet of the Hart-Parr Co., maker of farm and road tractors, as of Oct. 31, 1923, shows net sales of \$969,932 for the year, an increase of 26 per cent over 1922. There was, however, a net operating loss, including sales, administrative and general expenses, of \$104,820 as compared with \$268,623 the preceding year.

Current assets of \$886,316 are reported, including \$134,417 cash; \$13,367 certificates of deposit, less allowances; \$63,630 trade acceptances; \$145,983 notes receivable and warrants, less allowances; \$107,970 customers' accounts, less allowances, and \$420,946, merchandise inventories.

Current liabilities total \$252,378, made up of \$175,000 notes payable and \$77,378 accounts payable and accrued.

Exporters Will Get All Data on Tariffs

Percy Owen, Speaking at Luncheon, Tells of One Aim of Automotive Division

NEW YORK, Feb. 26—Automotive tariff information concerning every country in the world soon will be made available for exporters, according to a statement made here today by Percy Owen, recently appointed chief of the automotive division, Bureau of Foreign and Domestic Commerce.

Mr. Owen was guest of honor at a luncheon participated in by the Overseas Club of the Automotive Boosters and the N. A. C. C., M. A. M. A. and Rubber Association export managers. About fifty automotive men, interested in foreign trade, listened with satisfaction to Mr. Owen's statement that an immediate effort would be made to put into the Export Manual, developed by the automotive division, complete information for the whole world on tariffs and on a few other important topics instead of concentrating on a few countries and trying to give a very detailed outline.

In this initial appearance before an automotive group interested exclusively in overseas business, Mr. Owen gave the impression of having sensed quite fully the needs of automotive exporters and of having visualized clearly in the short time he has held his present position the very practical function of the automotive division in promoting foreign sales.

Kraus Is Presiding Officer

H. L. Kraus, export manager, Apco Mfg. Co., president of the Overseas Club, presided. Others present included:

George F. Bauer, N. A. C. C.; Thomas F. Wilson, Apco Manufacturing Co.; Herman Deuster, M. A. M. A.; J. Ross Jennings, M. A. M. A.; R. A. Bruce, American Bosch Magneto Corporation; George E. Quisenberry, J. L. Gilbert, J. W. Grummon and C. H. Moulton, all of *El Automovil Americano*; A. D. Kunze, Rubber Association of America; H. A. Reed, Kelly-Springfield Tire Co.; Harvey Wilson, Rubber Association of America; Dudley F. Yard, Pennsylvania Rubber Co.; Henry G. Lubke, General Tire & Rubber Co.; A. R. Cormully, Ajax Rubber Co.; H. E. Smith, United States Rubber Export Co.; J. B. Tower, United States Rubber Export Co.; K. S. Chamberlain, Flisk Rubber Co.; E. C. Steinacher, Moto-Meter Co.; Walter Rinck, Stevens & Co.; Joseph Holle, McCord Radiator & Manufacturing Co.; R. A. Rodriguez, Rodriguez & Co.

George H. Barnard, Wire Wheel Corporation of America; Norman G. Shidle, *Automotive Industries*; T. F. Gorman, Overseas Motor Service Corporation; J. I. Brush, The Prest-o-Lite Co., Inc.; J. P. Kane, Kane-Hacker Co.; V. Aguirre, Jr., Lee Rubber Co.; Paul Cornell, Republic Rubber Co.; B. G. Plumacher, American Manufacturers Foreign Credit Underwriters; Franklin Johnston, *American Exporter*.

Pablo Homs, Cole Motor Car Co.; G. R. Ford, Packard Motors Export Corporation; B. C. Budd, Packard Motors Export Corporation; I. J. Miranda, Commerce Motor Truck Co.; F. J. McHugh, A. Schrader Sons, Inc.;

A. J. Miranda, Jr., Mercer Motors Co.; C. L. Pike, P. F. Baillet Co.; P. F. Baillet, P. F. Baillet Co.; F. K. Mossbey, Mercer Motors Corporation; F. J. Werner, Shaler Export Corporation; Ernest Lenz, E. W. Lenz Co.; R. C. Dunn, United States Department of Commerce, and Clement Pueschel, Locktite Patch Co.

FINANCIAL NOTES

Madison Tire & Rubber Co.'s consolidated balance sheet as of Dec. 31 for the parent company and subsidiaries shows assets of \$2,455,928, including \$48,003 cash, \$270,644 receivables, less reserves; \$332,680 inventories; \$127,333 investments; \$1,160,046 land, buildings, machinery, etc.; \$500,000 good will, trade name and patents and \$16,219 prepaid expenses. Current liabilities are placed at \$320,563, with \$35,000 reserves, \$2,000,000 preferred stock and \$100,345 common stock.

Fisher Body Corp. and its subsidiaries report for the quarter ended Jan. 31 net income of \$5,667,176, equal to \$9.44 a share on the 600,000 shares of no par value capital stock outstanding, after deducting interest, Federal taxes, etc., as compared with \$5,237,912 in the preceding quarter. The Fisher Body Co. of Ohio, for the same quarter, reports net income of \$986,887, as compared with \$859,380 in the third quarter of last year.

Edmunds & Jones Corp. has declared an extra dividend of 50 cents a share on common, in addition to the regular quarterly dividend of 1½ per cent on preferred and 50 cents on common, payable April to holders of record March 20.

Durant Motor Co. of California, reporting its income account for the year ended Dec. 31, shows net after taxes and depreciation, \$614,820; royalties to parent concern, \$360,937 and balance for dividends, \$253,883.

Moreland Motor Truck Co. announces sales of \$3,944,894 in 1923; net earnings of \$340,135; net income of \$302,635 and \$1.59 a share earnings on the common. Federal taxes amounted to \$37,500.

C. M. Hall Lamp Co. has declared a dividend of 25 cents a share, payable March 31 to stock of record March 28.

Mengel Co. has declared a dividend of 3½ per cent on preferred, payable March 1 to stock of record Feb. 28.

Fafnir Bearing Co. has declared an extra dividend of 5 per cent or \$1.25 a share, payable March 1.

ROAMER PLANS MORE CARS

KALAMAZOO, MICH., Feb. 25—The Roamer Motor Car Co. desires to correct the impression that it will concentrate on the production of Pennant taxicabs. While it will manufacture taxicabs, it is not the intention to abandon passenger cars, and this branch of the business will receive as much attention as do the taxicabs. The company is planning for production on an increased scale in the near future.

GOODRICH PRICES REDUCED

AKRON, OHIO, Feb. 25—The B. F. Goodrich Co. announces a reduction of from 15 to 22 per cent in the prices of the full-sized balloon tires.

BANK CREDITS

Written exclusively for **AUTOMOTIVE INDUSTRIES** by the **Guaranty Trust Co.**, second largest bank in America.

Continued weakness in stocks was accompanied last week by a further recession in general commodity prices, which tended to accentuate the cautious attitude that still dominates most markets. The dwindling of the prospects for a coal strike in the spring was followed by a slackening in steel buying, although manufacturing remains very active. The continued decline in raw cotton was reflected in the prices of finished goods. Stormy weather is reported to have interfered somewhat with the distribution of goods for spring trade.

Car loadings in the week ended Feb. 9 numbered 906,489, comparing with 929,936 in the preceding week and 849,382 in the corresponding week last year. Total net operating income of the Class I railroads in 1923 amounted to \$977,543,590, representing a return of 5.10 per cent on their tentative valuation. This compares with a return of 4.14 per cent in 1922.

Fisher's index of wholesale commodity prices stood at 152.4 last week, comparing with 154.2 for the preceding week and 155.2 two weeks before. Bradstreet's food index declined from \$3.35 to \$3.34. The retail food index of the Bureau of Labor Statistics stood at 149 for the month of January, as against 150 for December and 146 for the year 1923.

Discounts by Federal Reserve banks declined \$50,200,000 during the week ended Feb. 20, a decline of \$64,500,000 in bills secured by Government obligations, being partially offset by an increase of \$14,300,000 in "other bills discounted."

Loans of reporting member banks increased \$3,000,000 during the week ended Feb. 13. A decline of \$28,000,000 in loans secured by stocks and bonds was more than offset by increases of \$2,000,000 in loans secured by Government obligations and \$29,000,000 in "all other" loans. Investments declined \$2,000,000 and Government deposits \$14,000,000, while cash in vaults rose \$25,000,000, net demand deposits \$129,000,000, and borrowings from Federal Reserve banks \$62,000,000.

Call loan rates were easier last week, the range being from 4 to 4¼ per cent. Time money was nominally firmer, being quoted at 4¾ to 5 per cent, with most of the business done at the lower figure.

\$1,750 to \$2,500 Cut from LaFayette Prices

MILWAUKEE, Feb. 27—Reductions in price ranging from \$1,750 to \$2,500 and affecting all models have been announced by the LaFayette Motors Corp.

The following table shows the old and new list:

	Old Price	New Price
Roadster	\$5,000	\$3,250
Phaeton	5,000	3,250
Torpedo	5,000	3,250
Four-Door Coupe.....	6,300	4,300
Imperial Limousine....	6,750	4,700
Sedan	6,500	4,400
Limousine	6,500	4,000

Will Try to Extend Truck Use Overseas

Efforts to Be Made at Motor Congress to Stimulate Interest of Railroads

WASHINGTON, Feb. 26—An effort to interest railroads in foreign countries in the use of motor trucks in short hauls, L.C.L. shipments and store deliveries, will be one of the big features of the International Motor Transport Congress to be held in Detroit. Plans to this end were gone over this week with the Automotive Division of the United States Department of Commerce, by George F. Bauer, secretary of the Foreign Trade Committee of the National Automobile Chamber of Commerce.

The present plan contemplates that the story of how motor trucks in the United States have supplemented short hauls and L.C.L. shipments will be carried abroad with the aid of the foreign representatives of the Automotive Division. This phase of the work, Mr. Bauer states, will be gone over thoroughly with the delegates to the Congress, being supplemented by properly directed information to potential truck users in foreign countries.

"The truck has become a big factor in the American scheme of transportation," Mr. Bauer declared, "and we are quite confident that we can demonstrate to the visiting delegates what an economic saving can be effected by a more general use of trucks."

While in Washington Mr. Bauer visited the State Department consulting with officials on the matter of passports and the expediting of visés and other courtesies to the visiting delegates.

Acceptances Being Received

NEW YORK, Feb. 26—Encouraging support of the International Motor Transport Congress, scheduled for May 21 to 24 at Detroit, is reported by George F. Bauer, secretary of the Foreign Trade Committee of the National Automobile Chamber of Commerce, which is sponsoring the event.

Acceptances have been received from fifteen different countries and foreign organizations. This is considered remarkably good in view of the fact that the invitations have been out only a comparatively short time. Within the next three weeks most of the replies will be in, and it will be possible to gauge the possible attendance.

Organizations which have accepted the Chamber's invitation to participate but which have not yet named their representatives include three Argentine clubs—the Automobile Club of Argentina and the Circulo Argentino de Inventores, both of Buenos Aires, and the Touring Club of Argentina.

The Motor Traders Association of New South Wales, an Australian organization, is listed as are the Trinidad Automobile Association, Automotive Industries of

Canada, the American-Polish Chamber of Commerce and Industry of Warsaw, Poland, the Automobile Club of Seville, Spain and the Automobile Club of Czechoslovakia.

Individual acceptances have been received from Jorge de Paiva Meira of the Automobile Club of San Paulo, Brazil; W. Herman Slade of Slade, Allen & Co., dealers, Sydney, Australia; Otto Lippmann, Lippman & Co., dealers, Vienna, Austria; Charles McEneaney, Ford dealer, Port of Spain, Trinidad, B. W. I.; George F. Huggins of George F. Huggins & Co., Ltd., also of Port of Spain; August Fohr, dealer, Freiburg, Germany; and Manuel Y. Loaiza of Hermosello, Mexico.

INDUSTRIAL NOTES

The Acklin Stamping Co., manufacturer of pressed steel automobile steering wheel spiders in addition to other pressed metal parts, is building a new plant at Nebraska avenue and the New York Central Railroad, Toledo, which is to cost \$250,000. It will be 600 x 150 feet.

United Motor Air Cleaning Co., has been organized with offices at Birmingham and will handle the United Air Cleaner throughout the state of Alabama.

Bock to Acquire Stock Held by Standard Parts

TOLEDO, Feb. 27—Formal steps to complete the separation of the Bock Bearing Co. of this city from the Standard Parts Co. of Cleveland will be taken at a special meeting of the stockholders of the local company to be held at Cleveland on March 6.

The preferred stockholders of the Bock Bearing Co. have been in control of the business for several months and have now made arrangements to acquire the common stock owned by the big holding company, which has been in receivership for several years.

The Bock Bearing Co. will be reorganized, it is contemplated, so that its 12,000 shares of common stock shall be exchanged share for share for new stock of no par value. Additional directors will be put on the board. Preferred stock, of which there are 3372 shares, 7 per cent, will remain as at present.

No change in management is contemplated. Robert E. Clingan, who is now vice-president and general manager, will remain in these capacities under the new plan.

The company has been enjoying good business this year so far and expects to make further gains when its corporate affairs are straightened out and it is put on a wholly independent basis.

MELLING FORGE ELECTION

LANSING, MICH., Feb. 27—Directors of the Melling Forge Co. were reelected at the annual meeting as follows: W. H. Newbrough, E. C. Shields, Harry J. Sproat, A. W. Bowes and J. W. Wilford. Officers will be elected at a later meeting.

METAL MARKETS

Although opening of second quarter order books by the leading sheet producer at unchanged prices tends to confirm previous indications of a continuance of prevailing sheet quotations, automotive consumers of full-finished sheets are beginning to encounter greatly increased difficulty in securing reasonably prompt deliveries, and in this specialty the possibility of the making of a premium market for prompt shipments must be figured with. Neither the leading interest nor the independents are willing to promise shipments before April. One of the leading producers of full-finished sheets recently began capacity operations, starting up three additional of its total of 20 mill units.

Despite a marked increase in finishing capacity since the last flurry in the sheet market, present conditions reveal again that the pressure upon this department of the steel industry has not been fully relieved. Railway equipment interests are showing more interest in sheets, and, compared with makers of other steel products, sheet rollers may be said to be sitting very pretty. Much disparity is in evidence between the steel reserves of automotive consumers. Some plants undoubtedly have enough steel on hand to keep them going for a month or more while others would be hard put to maintain their operating schedules if they failed to receive steel shipments from mills even for so brief a period as a fortnight.

Conditions in the market for strip steel are unaltered and the same may be said of cold-finished bars. Alloy steel mills have sufficient automotive business on hand to make certain a satisfactory rate of operations during the remainder of the year's first quarter, and the momentum of demand is such that producers are not greatly worried over the second quarter. Whatever developments occur with reference to taxation legislation are certain to be reflected in the steel market—perhaps more pronouncedly so even than in the securities or other commodity markets. The steel market is waiting for some constructive development in the general business and economic situation that will act as a prop for values.

Pig Iron.—Blast furnace interests and sales agencies are somewhat more reserved regarding second quarter contracts. Generally 50 cents a ton more is quoted for second quarter than for prompt shipments of foundry iron. The leading manufacturer of low-priced passenger motor cars recently put out an inquiry for 250,000 tons of ore for his blast furnaces, and this inquiry is attracting considerable attention in the trade.

Aluminum.—Relatively heavy tonnages of virgin aluminum ingots have recently arrived from Norway, the bulk of this metal being consigned to the sole domestic producer and the remainder to the American selling agent for the British aluminum producer. The latter arrivals are all sold. Arrivals of sheets from abroad are impressively light.

Copper.—When the copper market recently crossed the 13-cent level, it had been in the doldrums so long that it is little wonder prophecies of 15-cent copper immediately began to fill the air. The market's behavior since, however, shows that eagerness on the part of custom smelters and some outside holders to unload at the slightly better prices is too keen for any spectacular upward movement, a rather slow enhancement of values being looked for.

Calendar

FOREIGN SHOWS

- March 14-23—Geneva, International Motor Exhibition, under the auspices of La Chambre Syndicale Suisse de l'Industrie Automobile.
- April 2-13—Barcelona, Automobile Exposition, under the auspices of the Confederacion de Camaras Sindicales Espanolas del Automovillismo y Ciellismo, Palacio de Arte Moderno.
- Aug. 23-Sept. 6—Toronto, Ont., National Automobile Show in conjunction with the Canadian National Exhibition under the sanction of the Canadian Automotive Equipment Association and the Automotive Industries of Canada.
- Oct. 2-12—Paris, passenger cars, motor cycles, bicycles and accessories, Grand Palais.

- Oct. 17-25—London, Annual Passenger Car Show, Olympia.
- Oct. 22-31—Paris, motor trucks, stationary engines, garage tools and machine tools, Grand Palais.

RACES

- April 24—Fresno.
- April 27—Trapani, Italy, International Automobile Race.
- May 30—Indianapolis.
- June 14—Altoona.
- July 4—Kansas City.
- Aug. 3—Lyons, France, European Grand Prix.
- Sept. 1—Syracuse.
- Oct. 4—Fresno.
- Oct. 19—Kansas City.
- Nov. 24—Los Angeles.

CONVENTIONS

- March 31-April 4—New Orleans, Annual Spring Meeting of

the Automotive Equipment Association.

- May 19-22—Detroit, National Automotive Service Convention and Maintenance Equipment Show, under the auspices of the Service Division of the National Automobile Chamber of Commerce, General Motors Building.
- May 21-24—Detroit, International Motor Transport Congress under the auspices of the National Automobile Chamber of Commerce.
- June 3-4—Detroit, Midsummer Meeting of the Automobile Body Builders Association, Hotel Statler.
- June—Washington, Pan American Highway Congress, under the auspices

of the Pan American Highway Mission.

- Sept. 22-26—Boston, Sixth Convention and International Steel Exposition of the American Society for Steel Treating.

S. A. E. MEETINGS

- March 13—Metropolitan Section, Replacement Parts and Accessories.
- March 14—Milwaukee, Joint Meeting of Milwaukee Section, Midwest Section and Engineers' Society of Milwaukee, Four-Wheel Brakes.
- April 17—Metropolitan Section, Fleet Maintenance, F. Winchester.
- May 15—Metropolitan Section, What Roads and Steels Do to Automobiles.

Gasoline Has Better Starting Qualities

WASHINGTON, Feb. 25—The Bureau of Mines' ninth semi-annual survey covering sales in ten American cities indicates that the average motor gasoline being marketed this winter possesses slightly better engine-starting qualities than that tested in former winter surveys. A slight decrease is shown in the average for the 20 per cent distillation point and also in the average for the initial boiling point of samples tested.

In certain districts petroleum refiners appear to be obtaining a much better fractionation of the lighter products. In other words, through greater skill and improved mechanical appliances, they are able to make cleaner cuts of gasoline and kerosene refined from crude oil, thus permitting an increased yield of gasoline without appreciably affecting quality.

Federal Specifications Raised

About two years ago the 90 per cent distillation point in Federal specifications was raised in order to permit a greater quantity of gasoline to be obtained from a given quantity of crude oil, while still maintaining a motor fuel of satisfactory quality.

At the time this change was made the end point in the distillation was allowed to remain as it had previously stood, and a question arose as to whether refiners would be able to take advantage of the increase in the 90 per cent point and still maintain the old end point. The results of the present survey indicate that this is being done successfully in certain districts.

With the exception of those indicated changes, the Bureau of Mines found that the winter grade of motor gasoline now being marketed is not materially changed from that of recent years.

The survey covered the cities of New York, Washington, Pittsburgh, Chicago, New Orleans, St. Louis, Denver, Salt Lake City, San Francisco and Bartlesville, Okla. It was found that in all cities, except St. Louis and Denver the average of all gasoline samples tested came well

within the range of Federal specifications.

Despite this fact, seventy-four out of the 149 samples tested, or practically one-half, failed to meet Government motor gasoline specifications in some particular. The samples obtained in Washington, D. C., registered the least failures.

An appreciable decrease in the initial boiling point for the January, 1924, averages as compared with those for January, 1923, is shown, although this change is not so marked in the averages for New York, Pittsburgh and Chicago.

Details of the survey are given in Serial 2577, which can be obtained from the Bureau of Mines, Washington.

Used Car Problem Looms Serious in Buenos Aires

BUENOS AIRES, ARGENTINA, Jan. 29 (by mail)—The used car situation here is becoming increasingly important and, as the number of automobiles in service is rapidly being enlarged, the problem may become serious within the next year or so. Some distributors are standing together and are refusing to make excessive allowances on trade-ins, but, unfortunately, some of their competitors do not see it in the same light. The allowances in some cases are really exorbitant and cannot fail to have bad consequences if the practice is continued.

Deferred payment plans also are engaging the attention of local representatives, but the difficulty here is that the Argentina laws do not give full protection to the seller. Nevertheless, time selling is becoming of such consequence that numerous distributors are giving serious consideration to this phase of the general business.

Exchange is still "off color" and, frankly, it may be questioned whether any great improvement is to be expected in the near future. Despite this, sales seem to be going along fairly well, and the belief is that the automobile business will experience an impulse in 1924, not only in Argentina but also in Uruguay and to some extent in Chile.

A. A. A. Lending Aid to Cut Lamp Glare

WASHINGTON, Feb. 26—An invitation has been accepted by the American Automobile Association whereby it will cooperate with the American Engineering Standards Committee in the war on headlight glare.

President Thomas P. Henry of the A. A. A. has appointed Major R. E. Carlson, an engineer of the Bureau of Standards, as a representative to serve on the sectional committee with the A. E. S. committee which is charged with keeping up to date the present tentative standard specifications for laboratory tests for approval of electric headlight devices for motor vehicles. The Illuminating Engineering Society and the Society of Automotive Engineers are the joint sponsors for the work of the sectional committee.

The American Engineering Standards Committee in November, 1922, approved specifications for laboratory tests of automobile headlight devices, which were prepared by the Illuminating Engineering Society. The list of headlight devices manufactured in the United States which conform to the specifications were approved by eleven States.

In addition to working for the approval of standardized specifications by the various States, the American Automobile Association, through its affiliated clubs, has been carrying on an energetic campaign to have motorists check up on their headlights and have them properly adjusted, so that it will not be necessary to dim lights in approaching another vehicle at night.

LUMBER DEMAND ACTIVE

ATLANTA, GA., Feb. 27—Marked activity during February in the demand for thicker dimensions of ash, maple and elm from the northern automobile body trades is reported by the larger wholesalers and manufacturers in the Atlanta lumber market, who state prices are mounting steadily as a result. Mills producing ash are operating at capacity